DRAFT FINAL

APPENDIX C
RISK ASSESSMENT SUMMARY REPORT

REMEDIAL INVESTIGATION REPORT

FAR EAST ILLEGAL DUMP SITE
FORT BLISS, TEXAS

Prepared for:

Department of the Army
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ACRONYMS AND ABBREVIATIONS

ATSDR	Agency for Toxic Substances and Disease Registry
bgs	below ground surface
COPC	chemical of potential concern
COPEC	chemical of potential ecological concern
CSM	conceptual site model
ECSM	ecological conceptual site model
EPC	exposure point concentration
ERA	ecological risk assessment
ESV	ecological screening value
HHRA	human health risk assessment
HHSV	human health screening value
IUR	inhalation unit risk
PPRTV	Provisional Peer Reviewed Toxicity Value
RfC	reference concentration
RfD	reference dose
RI	remedial investigation
RME	reasonable maximum exposure
RSL	Regional Screening Levels
SI	site inspection
TRRP	Texas Risk Reduction Program
TRV	toxicity reference value
UCL	upper confidence limit
UFP-QAPP	Uniform Federal Policy Quality Assurance Project Plan
USEPA	U.S. Environmental Protection Agency

UNITS

µg	micrograms
cm^2	square centimeters
cm^3	cubic centimeters
g	gram
kg	kilogram
L	liter
m^2-s	square meter per second
m^3	cubic meter
mg	milligrams
s	second

CHAPTER 1
INTRODUCTION

1.1 Purpose and Scope

This risk assessment is part of the remedial investigation (RI) for the Far East Illegal Dump Site at Fort Bliss, TX. The purpose of the risk assessment is to determine the potential risk to human health and ecological receptors associated with exposure to contaminants of potential concern (COPC) in soil.

A risk assessment is a scientific procedure used to estimate the potential for both current and future adverse effects on human health and the environment from exposure to COPCs present in environmental media. At a contaminated site, a risk assessment is prepared and serves as the basis for evaluating risk posed from exposure to contamination if no remediation or institutional controls are applied.

This risk assessment follows the technical approach (i.e., data evaluation, exposure assessment, toxicity assessment, risk characterization, and uncertainty analysis) presented in USEPA's Risk Assessment Guidance for Superfund (RAGS). This risk assessment also includes the conceptual site model (CSM) that identifies the receptors and exposure pathways that are evaluated in the risk assessment.

1.2 Organization

Chapter 1 of this report is a brief introduction. Chapter 2 describes the data evaluation and COPC identification process. Chapter 3 describes the human health risk assessment (HHRA) and Chapter 4 describes the ecological risk assessment (ERA). Chapter 5 presents the references used in the preparation of this document. Tables and figures referenced in this report follow Chapter 5.

CHAPTER 2
DATA EVALUATION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN

2.1 Data Evaluation

RI fieldwork was conducted between March 3, 2017 and March 7, 2017. The investigation activities included a visual survey of the investigation area and surface and subsurface soil sampling. The visual survey identified two areas with waste/debris that were located outside the site fence line. During the RI, soil sampling was conducted in the surface (0.0 to 0.5 feet bgs) soil and subsurface (2 to 3 feet bgs) soil. Within the site, fenced boundary samples were collected from ten grids. Surface soil samples consisted of ten 15-point multi-incremental (MI) surface soil samples. Subsurface soil samples were collected at the location with the highest organic vapor analyzer, photoionization detector (OVA-PID) reading from each grid. Discrete surface soil samples were also collected at the two areas with waste/debris located outside of the site fence line. Surface and subsurface discrete background soil samples were also collected from three locations in the vicinity of the site. All samples were submitted to the laboratory for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), target analyte list (TAL) metals, TCL pesticides, TCL herbicides, total petroleum hydrocarbons (TPH) and polychlorinated biphenyls (PCBs) analysis.

Chemical results with final validation qualifiers of any letter other than "U" or "UJ" were considered detected and suitable for use in risk assessment; therefore "U," "UJ," and "J" qualified data results were used for identification of COPCs for inclusion in the risk assessment (USEPA, 1989).

For purposes of the risk assessment, all soil samples are considered representative of surface soil, as the Texas Risk Reduction Program (TRRP) defines surface soil as the top 5 feet (ft) for commercial/industrial land uses and the top 15 ft for residential land use. All soil samples at this site were collected within the top 3 ft.

2.1.1 Determination of Background Values

Metals are naturally occurring. Because no site-specific background concentrations are available, background values established by the State of Texas, in the Texas Risk Reduction Program (TRRP) were selected for use in identification of COPCs, in accordance with the approved final work plan. These values are presented in **Table 2.1**. In addition, six discrete soil samples were collected from three locations outside the boundaries of the site to determine if regional concentrations of naturally occurring elements are similar to state-wide background. Based on the Hazard Ranking System Guidance Manual from USEPA (USEPA 2007), an observed release is present if the site concentrations are greater than three times the mean of the background samples. Site-related concentrations that are less than these values can be assumed to be within the range of naturally occurring concentrations, and are not expected to represent an observed release due to site activities.

2.1.2 Identification of Chemicals of Potential Concern

COPCs were selected by comparing the maximum detected concentration of each analyte to Project Action Limits (PALs). Those metals that are present at concentrations greater than the PALs were then evaluated by comparison to background concentrations. The COPC list consists of those analytes that are present at concentrations greater than both the PAL and background concentrations. Chemicals detected at concentrations less than these criteria do not represent an observed release and were not evaluated further. Chemicals that are not COPCs are not expected to pose a risk to human or ecological receptors.

2.1.2.1 Selection of Human Health and Ecological Screening Values

Consistent with the Uniform Federal Policy Quality Assurance Project Plan (UFP-QAPP) (CAPE 2016), the PALs for this project are the most conservative screening value from the applicable Human Health Screening Values for residential soil and protection of groundwater, and Ecological Screening Values. The Human Health Screening Values were selected from the TCEQ Texas Risk Reduction Program (TRRP), Tier 1 Protective Concentration Levels (PCLs) for residential soil, 30 acre source area for direct contact ($^{Tot}Soil_{Comb}$), and protection of groundwater ($^{GW}Soil_{Ing}$). Ecological Screening Values obtained from the ecological benchmarks from TCEQ Ecological Risk Assessment Program, Conducting Ecological Risk Assessments at Remediation Sites in Texas (RG-263B), updated January 2017. The human health and ecological screening values are presented on the data summary tables (**Tables A-1, A-2, and A-3** in Appendix A of the RI report).

2.1.3 Chemicals of Potential Concern Results

Tables A.1 and A.2 present the soil sample analytical results for the various classes of organic compounds. As shown on these tables, there are no detected concentrations that exceed the human health or ecological screening values. Therefore, there are no COPCs identified on **Tables A-1 and A-2**.

Table A-3 presents the results of metals analysis in surface and subsurface soil. Six metals (arsenic, barium, chromium, lead, mercury, and selenium) were detected at concentrations greater than either the human health or ecological screening values (yellow highlighted values on **Table A-3**). The remaining metals that are not present at concentrations greater than human health or ecological screening values are not COPCs and will not be evaluated further.

2.1.3.1 Comparison to Background Concentrations

Table 2.1 presents a comparison of the maximum detected concentration of each of the six metals present at concentrations greater than human health or ecological screening values to state-specific background concentrations. Based on the information presented in **Table 2.1**, there are three metals (chromium, lead, and selenium) that are present at a maximum detected concentration that is greater than background. These metals are evaluated further.

2.1.3.2 Chromium

The maximum detected concentration of chromium (56.9 mg/kg) is greater than the state-specific background concentration (30 mg/kg). However, only a single incremental sample (FEIDS-SS3-S0-03) contained chromium at a concentration greater than background. Therefore, the site was evaluated in its entirety. The surface soil results represented by the incremental sample results were compared to the background concentration using a one-sample hypothesis test using the USEPA's ProUCL software (Version 5.1). Using the Wilcoxon Ranked Sum Test, the hypothesis test concludes that the site mean/median concentration is less than the state background concentrations with greater than a 95% confidence. The output from the ProUCL software is provided in **Attachment A.1**. Based on the information presented in this section, chromium is not a COPC and no further evaluation of chromium is required to complete the objectives of the RI.

2.1.3.3 Lead

The maximum detected concentration of lead (42.9 mg/kg) is greater than the state-specific background concentration (15 mg/kg) and the Tier 1 default Tier 1 PCL for protection of groundwater ($^{GW}Soil_{Ing}$) of 1.5 mg/kg). However, the default $^{GW}Soil_{Ing}$ PCL for lead is based on soil-water distribution coefficient (K_d) of 10 based on an assumption of sandy soil with a pH of less than 5. Other investigations conducted at Fort Bliss found soil pH to be higher than 5, ranging from approximately 7.5 – 9. Data tables associated with these other investigations are included as **Attachment A.2**. Therefore, assuming sandy soil with a pH greater than 5, the K_d can be assumed to be 234. Using the Tier 2 PCL equations provided by TCEQ

and all standard default values, except K_d, the Tier 2 $^{GW}Soil_{Ing}$ PCL is re-calculated as 34.8 mg/kg. The calculation of the 95% UCL for lead for surface soil using the ISM samples, results in a 95% UCL that is equal to 25.7 mg/kg. The ProUCL output is included as **Attachment A.3**. Therefore, there is no evidence of a release of lead to soil at a concentration that would pose a threat to groundwater. Based on the information presented in this section, lead is not a COPC and no further evaluation of lead is required to complete the objectives of the RI.

2.1.3.4 Selenium

As shown on **Table A-3**, selenium was detected at concentrations greater than the PAL in all soil samples, including all ISM and discrete samples. However, the maximum detected selenium concentration (2.3 mg/kg) is less than three times the mean of the site-specific background samples (5.0 mg/kg). Figure 4-1 of the RI report shows the results of the metals analysis, including selenium. As shown in Figure 4-1 and Table A-3, the site selenium concentrations range from 1.4 mg/kg to 2.3 mg/kg, while background concentrations range from 1.4 mg/kg to 2.0 mg/kg. Based on the information presented in this section, selenium is not a COPC and no further evaluation of selenium is required to complete the objectives of the RI.

CHAPTER 3
HUMAN HEALTH RISK ASSESSMENT

3.1 Risk Assessment Process

The HHRA estimates the potential risks and hazards to human health posed by chemicals associated with releases at the Far East Illegal Dump Site. As presented in U.S. Environmental Protection Agency (USEPA) guidance documents (USEPA, 1989), the risk assessment is a four-step evaluation process which includes:

- Data evaluation and identification of chemicals of potential concern (COPCs);
- Exposure assessment;
- Toxicity assessment; and
- Risk characterization.

Each of these steps is discussed in detail in the following subsections.

3.2 Exposure Assessment

The exposure assessment consists of three main elements:

1. Evaluation of exposure pathways and identification of receptors;
2. Estimation of exposure point concentrations (EPCs); and
3. Estimation of human intake.

The RA evaluates the reasonable maximum exposure (RME), as defined by USEPA (1993). The RME is designed to be a measure of "high-end" exposure. USEPA (2004) describes the selection of exposure parameters to support the RME as follows:

> In comparison with the average exposure, the "high end" exposure estimate is defined as the highest exposure that is reasonably expected to occur at a site but that is still within the range of possible exposures, referred to as the RME (USEPA, 1989). According to the *Guidance on Risk Characterization for Risk Managers and Risk Assessors* (USEPA, 1992), risk assessors should approach the estimation of the RME by identifying the most sensitive exposure parameters. The sensitivity of a parameter generally refers to its impact on the exposure estimates, which correlates with the degree of variability of the parameter values. Parameters with a high degree of variability in the distribution of parameter values are likely to have a greater impact on the range of risk estimates than those with low variability. For one or a few of the sensitive parameters, the maximum or near-maximum values should be used, with central tendency or average values used for all other parameters. The high-end estimates are based, in some cases, on statistically based criteria (95th or 90th percentiles), and in others, on best professional judgment. In general, exposure duration, exposure frequency, and contact rate are likely to be the most sensitive parameters in an exposure assessment (USEPA, 1989).

3.2.1 Conceptual Site Model

A CSM is used to qualitatively define the potential exposures to contaminants at or migrating from a site (i.e., to systematically evaluate the effect of chemicals in relevant media on potential receptors). The CSM describes onsite release points, affected physical media, types of contaminant transport and fate

mechanisms that may be involved at the site, each group of potentially exposed populations or receptors, and how each receptor group may contact site-related contamination. The site-specific CSM is formulated according to applicable guidance, with the use of professional judgment and site-specific information on land use, water use, contaminant sources, release mechanisms, routes of migration, potential exposure points, potential routes of exposure, and potential receptor groups associated with the site. A CSM diagram has been developed for the Far East Illegal Dump Site (**Figure 3.1**).

3.2.1.1 Evaluation of Exposure Pathways and Identification of Receptors

An exposure pathway evaluation describes how a receptor could be exposed to COPCs at, or migrating from, a site. A potentially complete exposure pathway consists of four necessary elements:

- A source and mechanism of chemical release;
- An environmental transport medium;
- A point of potential contact with a receptor; and
- A feasible route of exposure at the exposure point.

Consistent with *Risk Assessment Guidance for Superfund (RAGS)* (USEPA, 1989), reasonable, current and future land-use scenarios were considered for the site.

The Far East Illegal Dump Site (the Site) is located in far eastern Fort Bliss (FTBL), approximately 15 miles northeast of the main cantonment area. The Site is fully contained within the boundaries of three-strand, 12.5-gauge, smooth-wire fence with a doublewide gate, installed following the 2014 PA. It is located in an undeveloped area, in far eastern FTBL, approximately 15 miles northeast of the main cantonment area. The site is not currently in use. It is projected that the land use for this area will remain unchanged.

In accordance with the site-specific CSM (**Figure 3.1**), the following potential human exposure scenarios are evaluated:

- **Current and Future Commercial Workers/Military Personnel**: Commercial workers/military personnel are adults who are present within the area, including private contract workers or military personnel maintaining structures (e.g., fencing), landscaping, and similar outdoor activities, as well as military personnel conducting parachute/air drop training. Commercial workers/military personnel would only be expected to be exposed to constituents in soil to 5 feet bgs due to the minimally invasive activities that these receptors are expected to participate in, and to be consistent with the Texas Risk Reduction Program (TRRP) definition of surface soil.
- **Future Excavation/Construction Workers**: Excavation/ construction workers are adults who are present within the area. Construction workers are expected to perform any necessary maintenance activities resulting in short-term exposure to potentially contaminated media (e.g., exposure duration of 1 year), several days of the week (e.g., exposure frequency 40 days/year). Construction workers may be exposed to surface soil and to subsurface soil to 15 feet bgs via excavation activities. However, there are no excavation activities planned at this time.

Receptors may be exposed to soil through incidental ingestion, dermal contact, and inhalation of resuspended soil particles and volatile compounds. However, there are no COPCs identified in soil. Therefore, all soil exposure pathways are incomplete.

There are no perennial creeks, streams, or other bodies of fresh water within the investigation areas. Therefore, the surface water and sediment exposure pathways are incomplete for all human receptors.

Groundwater occurs approximately 300 feet below the site; no contaminants are expected to reach groundwater. Additionally, there are no groundwater wells on-site. The nearest groundwater wells are approximately 2.5 miles away. Therefore, the groundwater exposure pathways are incomplete for all receptors.

3.2.1.2 Exposure Area

An exposure area is the area over which sampling data are aggregated for estimation of risk. In this case, the exposure area is the entire area within the fenceline at the Site. Commercial workers/military personnel are assumed to be exposed to the 0 to 5 ft bgs soil interval, while excavation/construction workers may be exposed to the 0 to 15 ft bgs soil interval.

3.2.2 Estimation of Exposure Point Concentrations

EPCs are the concentrations of chemicals in a given medium to which a receptor may be exposed at a specific location known as the "exposure point." EPCs are estimated to represent the RME that is expected to occur at the site.

In this case, there are no COPCs identified in soil. Therefore, an EPC was not established.

3.3 Toxicity Assessment

The most recently available toxicity data were used by the TCEQ to calculate human health screening values. The toxicity criteria (slope factor, inhalation unit risk [IUR], RfD, and reference concentrations [RfC]) were selected using the hierarchy below, in accordance with USEPA guidance (USEPA, 2016a):

1. USEPA Integrated Risk Information System online database (USEPA, 2016b)
2. USEPA's Provisional Peer Reviewed Toxicity Values (PPRTVs) (USEPA, 2016c)
3. Agency for Toxic Substances and Disease Registry (ATSDR) Minimal Risk Levels (ATSDR, 2016)
4. California Office of Environmental Health Hazard Assessment's Toxicity Criteria Database (Office of Environmental Health Hazard Assessment, 2016)
5. USEPA's PPRTV screening toxicity values in appendices to certain PPRTV assessments (USEPA, 2016c)
6. USEPA's Health Effects Assessment Tables (USEPA, 1997a)

3.4 Risk Characterization

The final step in the risk assessment process is risk characterization. The purpose of the risk characterization step is to 1) review the results from the exposure and toxicity assessments; 2) quantitatively estimate the potential for carcinogenic (i.e., risk) and noncarcinogenic (i.e., hazard) effects; and 3) assess and discuss uncertainties associated with each of the aforementioned steps. To characterize potential noncarcinogenic effects, estimated exposure concentrations of COPCs were compared with their respective toxicity values. To characterize potential carcinogenic effects, the incremental probability of an individual developing cancer over a lifetime was calculated from estimated exposure concentrations and chemical-specific dose/response information (i.e., carcinogenic toxicity factors).

No COPCs were identified in soil at the Site. Therefore, there are no complete exposure pathways, and no unacceptable risks to human health. No further evaluation of risk is necessary.

3.4.1 Risk Assessment Uncertainties

All HHRAs involve use of assumptions, professional judgments, and imperfect data to varying degrees, which result in uncertainty in the final estimates of risk. Risk assessment in general is often based on conservative assumptions and scenarios. Uncertainty can be introduced into a health risk assessment at every step of the process outlined in this document. Uncertainties are present in a risk assessment because it requires integration of the following:

- Release of chemicals into the environment, and the areal and vertical distribution of these materials in soil;
- Fate and transport of chemicals in a variety of different and variable environments by processes that are often poorly understood or too complex to quantify accurately;
- Potential for adverse health effects in humans based on extrapolations from animal studies; and
- Probability of adverse effects in a human population that is highly variable with respect to genetics, age, activity level, and lifestyle.

This section qualitatively describes the inherent and site-specific uncertainties of the assessments process.

3.4.1.1 Uncertainty in Data Collection and Evaluation

The analysis of uncertainties focuses on determining whether the available data are representative of contaminant concentrations and site conditions, and whether features of sampling, analyses, or statistical treatment of the data result in an over- or underestimation of potential risk.

The use of maximum detected concentrations introduces uncertainty into the risk assessment since the use of one analytical result likely does not accurately represent the concentration of the chemical in the volume of soil being evaluated. In cases where the analyte is infrequently detected, the use of the maximum detected concentration will likely overestimate the actual EPC, resulting in an overestimate of the risk. In cases with few total samples, the use of the maximum detected concentration can either over- or underestimate the actual EPC depending on the distribution of the actual concentrations in the medium of concern.

It should be noted that only residential screening values and migration to groundwater were used in determining COPCs for this risk assessment, although a number of site receptors evaluated (e.g., commercial worker/military personnel, construction worker) do not conform to a conventional residential site-use pattern. Developing one COPC list for all receptors based on unrestricted land use screening values is very conservative; it ensures that every site chemical that could possibly contribute to risk or hazard is considered.

Chemicals that were never detected in any samples were eliminated from the risk assessment. It is possible that some chemicals that were eliminated from consideration in the risk assessment may have actually been present in samples at concentrations lower than the sample quantitation limit. If chemicals eliminated from the risk assessment were actually present in the environmental medium, the cumulative risk could be underestimated. Detection limits greater than human health screening criteria have the potential to underestimate the risk associated with exposure to COPCs. Any estimated detected concentration below the detection limit (e.g., J-flagged data) cannot be accurately quantified. The use of J-flagged data may underestimate the risk. However, the sampling plan attempted to reduce this uncertainty through the use of a consistent analytical approach as well as a biased sampling approach. Since samples were collected from areas most likely to be contaminated (i.e., at the location of observed surface debris), it is unlikely that chemicals were present at health-significant levels and not detected in at least one sample.

Chemicals that were detected at concentrations less than the selected screening criteria were eliminated from the risk assessment. It is possible that some of these chemicals may have been present at greater concentrations in areas that were not sampled, thus potentially underestimating the EPCs. However, the sampling plan attempted to reduce this uncertainty through the use of a consistent analytical approach as well as a biased sampling approach. Since samples were collected from areas most likely to be contaminated (i.e., at the location of observed surface debris), it is unlikely that chemicals were present at health-significant levels and not detected in at least one sample.

Steady-state conditions (i.e., the observed concentrations remain the same in the environmental media for the foreseeable future) were assumed for evaluation of potential future exposures. The assumption of steady-state conditions may tend to overestimate long-term exposure and health risk because chemical concentrations may decline over time due to natural dissipation processes (e.g., biological and chemical degradation) or dilution through transport processes. In some cases, depending on the chemical and or the release mechanisms involved, steady-state assumptions could potentially underestimate risk (e.g., breakdown products that are more toxic than the parent compound or a continuous source contributing to contamination in another medium).

3.4.1.2 Uncertainty in Exposure Assessment

The risk assessment estimates are conditional on actual and potential exposure pathways identified at the site. If exposure does not occur, no risks are present. Furthermore, the risk assessment process does not factor in the probability of exposure occurring. For example, there may not be a reason for a construction worker to excavate in a contaminated area, as future development is hypothetical.

Current land uses and characterization of the site's current physical setting provided the basis for predicting future land use at and in the vicinity of the site. The assumption of steady-state conditions was also used in predicting future contaminant concentrations. As discussed in Subchapter 2.5.6.1, this assumption would tend to overestimate potential future exposure levels because concentrations of chemicals may decline with time.

There is also some concern as to how well an exposure scenario approximates the actual conditions that a receptor may be exposed to at a given site. Potential human exposures could deviate from those used in the risk assessment through differences in exposure frequency, contact rates, exposure durations, body weight, and life span. Each of these factors has a degree of uncertainty associated with it that could over- or underestimate risk.

Evaluation of risks for the residential and site visitor include calculation of the risk to children and adolescents. Other sensitive subpopulations such as elderly people, pregnant or nursing women, and people with chronic illnesses were not specifically evaluated in this risk assessment. These subpopulations may be more sensitive to certain chemical exposures. However, USEPA generally considers sensitive subpopulations when developing toxicity factors. Therefore, specific evaluation of these sensitive populations is generally not required. Additionally, there are no known daycare or school facilities, healthcare facilities, nursing homes, retirement communities, or residential areas with children onsite currently.

3.4.1.3 Uncertainty in Toxicity Assessment

Some uncertainty is also inherent in the toxicity values used in the risk assessment. Carcinogenic slope factors and route-specific values were derived only for compounds that have been shown to cause an increased incidence of tumors in either human or animal studies. This dose-response curve is then assumed to be linear at low doses (e.g., those found in situations of environmental contamination) and is

used to predict tumor incidence at low exposure levels. When an animal study is used, the final slope factor is adjusted to account for extrapolation of animal data to humans. If the studies used to derive the slope factor were conducted for less than the life span of the test organism, the final slope factor had also been adjusted to reflect risk associated with lifetime exposure.

The slope factor is generally an upper 95th percentile confidence limit of the probability of a response based on experimental animal data in the multistage model. This means that the site-specific chemical risk is not likely to exceed the risk estimate derived through the model and is likely to be less than the predicted risk.

The chronic RfD for a compound is based on studies where either human or animal populations were exposed to a given compound by a given route of exposure for a major portion of the life span (as a USEPA guideline, seven years to a lifetime; USEPA, 1989). RfDs are derived by determining dose-specific effect levels from available quantitative studies and applying uncertainty factors to the most appropriate effect level to determine an RfD for humans. Uncertainty factors are generally applied as multiples of 10 to represent specific areas of uncertainty in the data. Typically, an uncertainty factor of 100 to 1,000 is used in the professional judgment of uncertainties. General uncertainties in the derivation of RfDs may be associated with factors such as (1) variations in the general population (to protect sensitive receptors), (2) extrapolation of animal data to humans, (3) use of a subchronic study versus a chronic study to determine the no-observed-adverse-effect level (NOAEL), or (4) use of a lowest-observed adverse-effect level versus a NOAEL. Both the uncertainty and modifying factors are conservative in nature and tend to overestimate risk.

Although the most current toxicity values assigned by USEPA are used in the risk assessment, these values may not be available for all compounds. The toxicity classification of a chemical may be under review or not available. If data are lacking, the chemical may not be accounted for in the estimates of potential risk. For some chemicals, no inhalation toxicity data were available. This adds an additional level of uncertainty, potentially underestimating the risk, as the toxicity for these chemicals has not been explicitly evaluated.

3.5 Conclusions

This HHRA was conducted to evaluate the potential for human health impacts as a result of potential exposures to chemicals in soil and groundwater at the Far East Illegal Dump Site.

No COPCs were identified in environmental media at the Site. Therefore, no unacceptable risks or hazards to human receptors are expected as a result of exposure to environmental contamination.

CHAPTER 4
ECOLOGICAL RISK ASSESSMENT

The ERA evaluates the potential risks to ecological receptors posed by chemicals detected in soil associated with the Far East Illegal Dump Site. As presented in USEPA and TCEQ guidance documents, the ERA consists of the following main components:

- **Problem formulation** contains the information necessary to focus the ERA. It presents the site history and environmental setting and selection of chemicals of potential ecological concern (COPECs); describes ecological CSMs (ECSMs) and indicator species; and discusses the selection of assessment endpoints and measures, and evaluation of available data.
- **Analysis** presents the technical evaluation of potential exposures and adverse effects through the Exposure Characterization and the Ecological Effects Characterization:
    - Exposure Characterization (analogous to human health exposure assessment) describes exposure assumptions and models used to estimate risk.
    - Ecological Effects Characterization presents an overview of the toxicity information available to derive toxicity reference values (TRVs) and ecological benchmarks for each indicator species or group.
- **Risk characterization** integrates the Problem Formulation and the Analysis to estimate the likelihood of impacts to ecological receptors from exposure to COPECs. It includes risk estimation, risk description, and an uncertainty analysis.
- **Uncertainty assessment** discusses the important sources of uncertainty and describes whether they may result in an underestimate or overestimate of ecological risks.

The ecological risk evaluation guidance provides for a phased approach to the risk evaluation that includes a preliminary screening evaluation, a screening-level ERA, and a detailed, site-specific baseline ERA.

4.1 Problem Formulation

The ERA evaluates the effects of stressors in the environment, including the effects of chemical contaminants on particular environmental receptors and integrates information of potential exposure of ecological receptors to contamination into an ECSM. The ECSM describes how environmental receptors may come into contact with stressors, and how these receptors potentially interact with one another.

The problem formulation step of an ERA includes selection of ecologically based endpoints that are relevant to decisions made about protecting the ecosystem. Ecologically based endpoints may be divided into two types: assessment endpoints are explicit expressions of the environmental value that is to be protected, and measures (formerly called measurement endpoints) are measurable responses to a stressor that are related to the characteristics selected as assessment endpoints.

4.1.1 Site Description and Anticipated Land Use

The Far East Illegal Dump Site (the Site) is located in far eastern Fort Bliss (FTBL), approximately 15 miles northeast of the main cantonment area. Several partially obscured waste piles containing broken glass vials, syringes, cans, bottles, tires, and vehicle parts were observed during a Preliminary Assessment (PA) conducted by Oneida Total Integrated Enterprises, Inc. (OTIE) in March 2014. The source of the waste and party responsible for dumping are unknown. The suspected illegal dumping is estimated to have occurred more than ten years ago based on available aerial images. The debris appeared to have

been dumped on the ground surface with no excavating or burial. The waste piles have become partially covered and mixed with wind-blown deposits, with scattered desert scrub vegetation growing through the piles. Following the PA, a fence was installed around the wastes. The area within the fenced boundary of the Site covers approximately 2.24 acres.

4.1.1.1 Topography and Vegetation

The site is relatively flat with low-relief type mounding/undulating topography roughly one to four feet in height, with scattered desert scrub brush throughout. There is no evidence of erosion or other movement or transport of the suspected illegally dumped waste piles from the Site.

4.1.1.2 Wildlife

In general, the wildlife noted to live within this soil type include jackrabbit, cottontail rabbit, coyote, bobcat, mourning dove, blue quail, road runner, prairie rattlesnakes, and various species of lizards and small rodents. During the site walk, small burrows and prints were observed across the area.

4.1.1.3 Ecological Conceptual Site Model

ECSMs are a visual representation of predicted relationships among stressors, exposure pathways, and assessment endpoints. ECSMs illustrate potentially complete ecological exposure pathways and outline the potential routes of exposure for each assessment endpoint. An ECSM identifies potential pathways for exposure of ecological receptors to COPECs at the site. An exposure pathway evaluation describes how a receptor could be exposed to COPECs at, or migrating from, the site. A potentially complete exposure pathway requires four necessary elements:

- A source and mechanism of chemical release;
- An environmental transport medium;
- A point of potential contact with a receptor; and
- A feasible route of exposure.

ECSMs illustrate onsite release points, affected physical media, types of COPEC transport mechanisms, groups of potentially exposed populations or ecological receptors, and how each receptor group may contact site-related contamination. In addition to potentially affected communities, ECSMs also identify major feeding guilds (e.g., omnivorous birds, carnivorous birds), and representative species or group of organisms for each complete, or reasonably anticipated to be complete, exposure pathway.

A CSM for the Site, including generic ecological receptors, is presented in **Figure 2.1**.

4.1.1.4 Exposure to Surface Soil

Ecological receptors may be at-risk from exposures to COPECs if there is a complete exposure pathway between the COPEC source and the receptor. Soil is the medium evaluated in the ERA. There is no surface water or sediment at the munitions response site. Generally, ecological receptors are not exposed to groundwater.

Ecological receptors may be at risk from exposure to COPECs in surface soil. The primary pathways identified for exposure of organisms to on-site surface soil include the following:

- Vegetation at the site may be exposed to soil contaminants through root contact, and some bioaccumulative contaminants may be taken up into the plant tissues. Similarly, invertebrates residing in contaminated soils could contact and potentially incorporate these contaminants.

- Wildlife may be exposed to the COPECs at the site via the consumption of food items (e.g., plants, invertebrates, and small animals), and by incidental ingestion of soil.

4.1.2 Identification of Chemicals of Potential Ecological Concern

Sample data were evaluated to determine if a release has likely occurred. As described in Section 2.1.3, there are no COPCs identified at the site. Therefore, there are no complete exposure pathways for ecological receptors.

4.2 Uncertainties

Uncertainties, which are inherent in all aspects of an ERA, include those related to problem formulation, exposure assessment, ecological effects assessment, and risk estimation and risk characterization. They may be associated with exposure parameters, bioaccumulation models, toxicity values, and other literature-based information, as well as with site data or lack thereof. This section lists relevant sources of uncertainty and describes whether they result in an under- or over-estimate of ecological risks.

4.2.1 COPEC Screening Process

In the COPEC selection process, chemicals that were detected at concentrations less than ESVs or were never detected were not evaluated further. While the lowest listed ESV was used for any given category, the COPEC selection process may have excluded some chemicals from further evaluation that may represent a potential hazard. Therefore, if some chemicals were excluded, the risk may be underestimated.

4.2.2 Exposure Assumptions

EPCs are the concentrations of chemicals in a given medium to which a receptor may be exposed at a specific location known as the "exposure point." EPCs are estimated to represent the RME that is expected to occur at the site.

In this case, there are no COPCs identified in soil. Therefore, an EPC was not established.

4.2.3 Evaluation of Potential Ecological Risk

No COPECs were identified in environmental media at the Site. Therefore, there are no complete exposure pathways and no unacceptable risk to environmental receptors.

4.3 Conclusions

No COPECs were identified in environmental media at the Site. Therefore, there are no complete exposure pathways and no unacceptable risk to environmental receptors.

CHAPTER 5
REFERENCES

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TABLES

Table 2.1. Soil Background Comparison
Far East Illegal Dump Site, Fort Bliss, Texas

Analyte	Units	Maximum Detected Site Concentration		Background Concentration [1]		Exceeds Background Concentration?
Metals						
Arsenic	mg/kg	3.5		6		No
Barium	mg/kg	291		300		No
Chromium	mg/kg	56.9		30		**Yes**
Lead	mg/kg	42.9		15		**Yes**
Mercury	mg/kg	0.014		0.04		No
Selenium	mg/kg	2.3		0.3		**Yes**

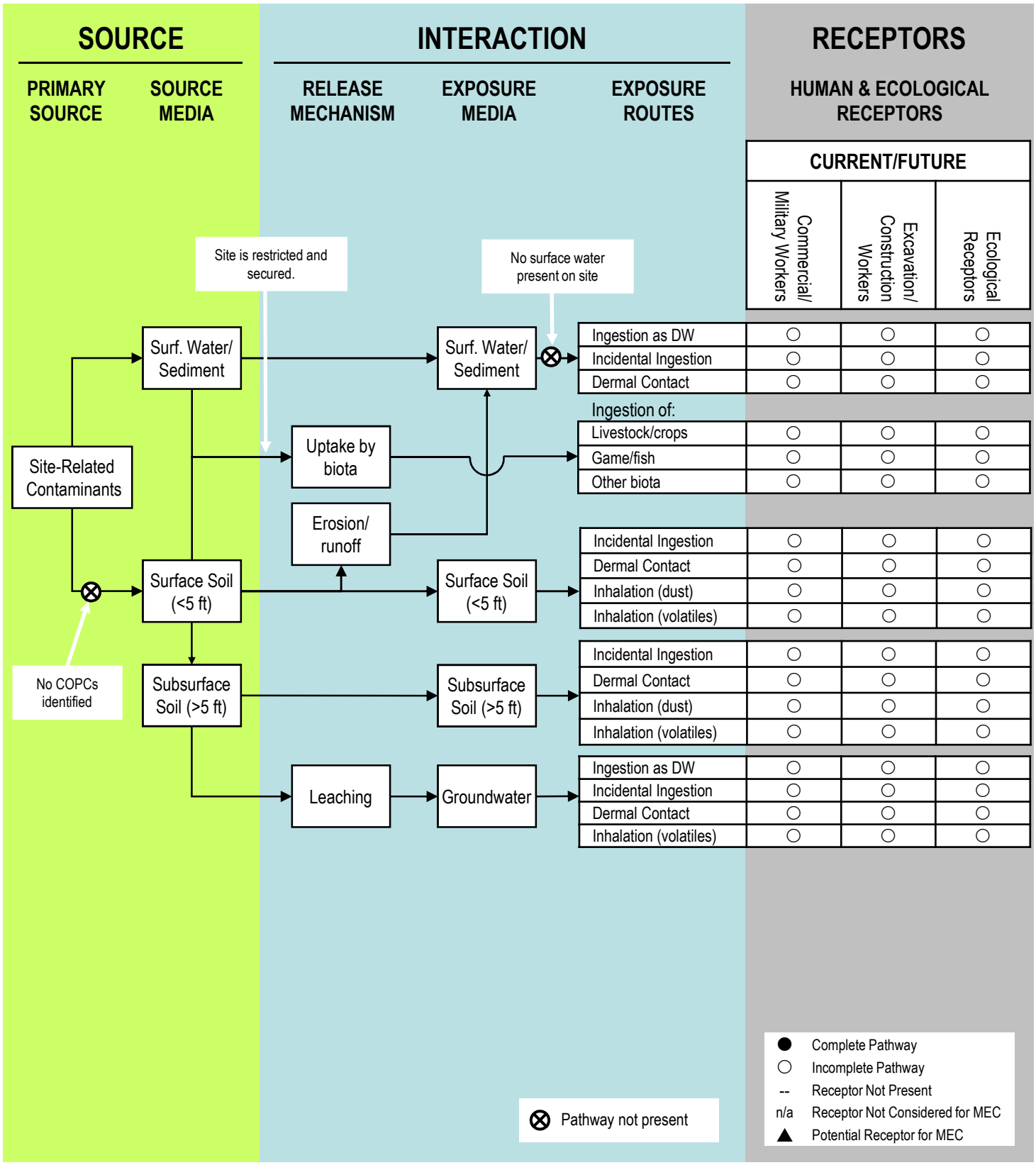
(1) - Background concentrations are the TRRP Texas-Specific Soil Background Concentrations [30 TAC 350.51(m)]

FIGURES

Figure 2-1
Conceptual Site Model Pathway Flow Diagram

Site/MRS Name: Fort Bliss- Far East Illegal Dump Site

Completed By: Steve Rembish, PARSONS ***Date Completed:*** July 7, 2017



ATTACHMENTS

	A	B	C	D	E	F	G	H	I	J	K	L
1	**Attachment A.1. ProUCL Supporting Documentation – Chromium**											
2	**One Sample Wilcoxon Signed Rank Test for Uncensored Full Data Sets without NDs**											
3												
4	User Selected Options											
5	Date/Time of Computation	ProUCL 5.17/3/2017 3:47:29 PM										
6	From File	Landfill_input.xls										
7	Full Precision	OFF										
8	Confidence Coefficient	95%										
9	Substantial Difference	0.000										
10	Action Level	30.000										
11	Selected Null Hypothesis	Mean/Median <= Action Level (Form 1)										
12	Alternative Hypothesis	Mean/Median > the Action Level										
13												
14	**Chromium**											
15												
16	**One Sample Wilcoxon Signed Rank Test**											
17												
18	**Raw Statistics**											
19	Number of Valid Observations	10										
20	Number of Distinct Observations	8										
21	Minimum	3.9										
22	Maximum	56.9										
23	Mean	10.24										
24	Median	5.25										
25	SD	16.41										
26	SE of Mean	5.189										
27	Number Above Action Level	1										
28	Number Equal Action Level	0										
29	Number Below Action Level	9										
30	T-plus	10										
31	T-minus	45										
32												
33	**H0: Sample Mean/Median <= 30 (Form 1)**											
34												
35	Exact Test Statistic	10										
36	Critical Value (0.05)	45										
37	P-Value	0.958										
38												
39	**Conclusion with Alpha = 0.05**											
40	**Do Not Reject H0, Conclude Mean/Median <= 30**											
41	**P-Value > Alpha (0.05)**											

Attachment A.2.a. Supporting Data Table
Fort Bliss, El Paso, Texas, Biggs Army Airfield OB/OD Site I
Validated Data Summary for Subsurface Soil Disposal Feature Samples Collected March and April 2017

SAMPLE ID:		PROJECT ACTION LIMIT[1]	OBOD1-DF2-SS-01-13		OBOD1-DF2-SS-01-38		OBOD1-DF6-SS-01-15		OBOD1-DF6-SS-01-42		OBOD1-DF6-SS-02-14		OBOD1-DF6-SS-02-40		OBOD1-DF9-SS-01-15		OBOD1-DF9-SS-01-42		OBOD1-DF14-SS-02-12		OBOD1-DF14-SS-03-12*		OBOD1-DF14-SS-02-36		OBOD1-DF17-SS-02-16		OBOD1-DF17-SS-02-44	
DATE SAMPLED:			04/04/2017		04/04/2017		03/28/2017		03/28/2017		03/28/2017		03/28/2017		04/03/2017		04/03/2017		04/03/2017		04/03/2017		04/03/2017		03/31/2017		03/31/2017	
LAB SAMPLE ID:			FA42738-1		FA42738-2		FA42500-4		FA42500-5		FA42500-1		FA42500-2		FA42707-1		FA42707-2		FA42707-4		FA42707-7		FA42707-5		FA42690-1		FA42690-2	
SAMPLE DEPTH (ft bgs):			1.08		3.17		1.25		3.5		1.17		3.33		1.25		3.5		1.0		1.0		3.0		1.33		3.67	
	Units																											
Polynuclear Aromatic Hydrocarbons - SW8270D-SIM																												
1-Methylnaphthalene	mg/Kg	1.5	0.041	U	0.036	U	0.033	U	0.036	U	0.034	U	0.035	U	0.034	U	0.035	U	0.036	U	0.034	U	0.033	U	0.035	U	0.045	U
2-Methylnaphthalene	mg/Kg	8.5	0.041	U	0.036	U	0.033	U	0.036	U	0.034	U	0.035	U	0.034	U	0.035	U	0.036	U	0.034	U	0.033	U	0.035	U	0.045	U
Acenaphthene	mg/Kg	20	0.041	U	0.036	U	0.033	U	0.036	U	0.034	U	0.035	U	0.034	U	0.035	U	0.036	U	0.034	U	0.033	U	0.035	U	0.045	U
Acenaphthylene	mg/Kg	120	0.041	U	0.036	U	0.033	U	0.036	U	0.034	U	0.035	U	0.034	U	0.035	U	0.036	U	0.034	U	0.033	U	0.035	U	0.045	U
Anthracene	mg/Kg	6.8	0.041	U	0.036	U	0.033	U	0.036	U	0.034	U	0.035	U	0.034	U	0.035	U	0.036	U	0.034	U	0.033	U	0.035	U	0.045	U
Benzo(a)anthracene	mg/Kg	0.8	0.0081	U	0.0072	U	0.0066	U	0.0072	U	0.0068	U	0.0071	U	0.0069	U	0.0070	U	0.0071	U	0.0069	U	0.0066	U	0.0071	U	0.0091	U
Benzo(a)pyrene	mg/Kg	0.56	0.0081	U	0.0072	U	0.0066	U	0.0072	U	0.0068	U	0.0071	U	0.0069	U	0.0070	U	0.0071	U	0.0069	U	0.0066	U	0.0071	U	0.0091	U
Benzo(b)fluoranthene	mg/Kg	5.7	0.0081	U	0.0072	U	0.0066	U	0.0072	U	0.0068	U	0.0071	U	0.0069	U	0.0070	U	0.0071	U	0.0069	U	0.0066	U	0.0071	U	0.0091	U
Benzo(g,h,i)perylene	mg/Kg	24	0.0081	U	0.0072	U	0.0066	U	0.0072	U	**0.0083**	**J**	0.0071	U	0.0069	U	0.0070	U	0.0071	U	0.0069	U	0.0066	U	0.0071	U	0.0091	U
Benzo(k)fluoranthene	mg/Kg	57	0.0081	U	0.0072	U	0.0066	U	0.0072	U	0.0068	U	0.0071	U	0.0069	U	0.0070	U	0.0071	U	0.0069	U	0.0066	U	0.0071	U	0.0091	U
Chrysene	mg/Kg	2.4	0.0081	U	0.0072	U	0.0066	U	0.0072	U	0.0068	U	0.0071	U	0.0069	U	0.0070	U	0.0071	U	0.0069	U	0.0066	U	0.0071	U	0.0091	U
Dibenz(a,h)anthracene	mg/Kg	0.55	0.0081	U	0.0072	U	0.0066	U	0.0072	U	**0.0035**	**J**	0.0071	U	0.0069	U	0.0070	U	0.0071	U	0.0069	U	0.0066	U	0.0071	U	0.0091	U
Fluoranthene	mg/Kg	10	0.041	U	0.036	U	0.033	U	0.036	U	0.034	U	0.035	U	0.034	U	0.035	U	0.036	U	0.034	U	0.033	U	0.035	U	0.045	U
Fluorene	mg/Kg	30	0.041	U	0.036	U	0.033	U	0.036	U	0.034	U	0.035	U	0.034	U	0.035	U	0.036	U	0.034	U	0.033	U	0.035	U	0.045	U
Indeno(1,2,3-cd)pyrene	mg/Kg	5.7	0.0081	U	0.0072	U	0.0066	U	0.0072	U	0.0068	U	0.0071	U	0.0069	U	0.0070	U	0.0071	U	0.0069	U	0.0066	U	0.0071	U	0.0091	U
Naphthalene	mg/Kg	1.0	0.041	U	0.036	U	0.033	U	0.036	U	0.034	U	0.035	U	0.034	U	0.035	U	0.036	U	0.034	U	0.033	U	0.035	U	0.045	U
Phenanthrene	mg/Kg	5.5	0.041	U	0.036	U	0.033	U	0.036	U	0.034	U	0.035	U	0.034	U	0.035	U	0.036	U	0.034	U	0.033	U	0.035	U	0.045	U
Pyrene	mg/Kg	10	0.041	U	0.036	U	0.033	U	0.036	U	0.034	U	0.035	U	0.034	U	0.035	U	0.036	U	0.034	U	0.033	U	0.035	U	0.045	U
Explosives - SW8330A																												
1,3,5-Trinitrobenzene	mg/Kg	0.91	0.13	U	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	U	0.12	U	0.12	U	0.11	U	0.14	U	0.14	U	0.14	U
1,3-Dinitrobenzene	mg/Kg	0.20	0.13	U	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	U	0.12	U	0.12	U	0.11	U	0.14	U	0.14	U	0.14	U
2,4,6-Trinitrotoluene (TNT)	mg/Kg	0.20	0.13	UJ	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	UJ	0.12	U	0.12	UJ	0.11	UJ	0.14	U	0.14	UJ	0.14	U
2,4-Dinitrotoluene	mg/Kg	0.20	0.13	U	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	U	0.12	U	0.12	U	0.11	U	0.14	U	0.14	U	0.14	U
2,6-Dinitrotoluene	mg/Kg	0.20	0.13	U	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	U	0.12	U	0.12	U	0.11	U	0.14	U	0.14	U	0.14	U
2-Amino-4,6-dinitrotoluene	mg/Kg	0.20	0.13	U	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	U	0.12	U	0.12	U	0.11	U	0.14	U	0.14	U	0.14	U
2-Nitrotoluene	mg/Kg	0.20	0.13	U	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	U	0.12	U	0.12	U	0.11	U	0.14	U	0.14	U	0.14	U
3-Nitrotoluene	mg/Kg	0.92	0.13	U	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	U	0.12	U	0.12	U	0.11	U	0.14	U	0.14	U	0.14	U
4-Amino-2,6-dinitrotoluene	mg/Kg	0.20	0.13	UJ	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	U	0.12	U	0.12	U	0.11	U	0.14	U	0.14	UJ	0.14	U
4-Nitrotoluene	mg/Kg	0.22	0.13	U	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	U	0.12	U	0.12	U	0.11	U	0.14	U	0.14	U	0.14	U
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/Kg	0.20	0.13	UJ	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	U	0.12	U	0.12	U	0.11	U	0.14	U	0.14	UJ	0.14	U
Methyl-2,4,6-trinitrophenylnitramine (Tetryl)	mg/Kg	0.28	0.13	U	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	U	0.12	U	0.12	U	0.11	U	0.14	U	0.14	U	0.14	U
Nitrobenzene	mg/Kg	0.20	0.13	U	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	U	0.12	U	0.12	U	0.11	U	0.14	U	0.14	U	0.14	U
Nitroglycerin	mg/Kg	2.0	0.85	U	0.99	U	0.76	U	0.79	U	0.75	U	0.92	U	0.84	U	0.82	U	0.79	U	0.75	U	0.91	U	0.91	U	0.91	U
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	mg/Kg	1.2	0.13	U	0.15	U	0.11	U	0.12	U	0.11	U	0.14	U	0.13	U	0.12	U	0.12	U	0.11	U	0.14	U	0.14	U	0.14	U
Pentaerythritol Tetranitrate (PETN)	mg/Kg	6.2	0.85	U	0.99	U	0.76	U	0.79	U	0.75	U	0.92	U	0.84	U	0.82	U	0.79	U	0.75	U	0.91	U	0.91	U	0.91	U
Metals - SW6010C																												
Aluminum	mg/Kg	64,000	**5,110**		**5,890**		**5,200**		**5,010**		**4,730**		**5,060**		**5,620**		**5,820**		**6,000**		**6,540**		**3,030**		**4,970**		**7,170**	
Antimony	mg/Kg	2.7	0.20	U	0.23	U	0.26	U	0.38	U	**0.080**	**J**	1.3	U	0.22	U	1.0	U	0.20	U	0.48	U	**0.046**	**J**	0.22	U	3.3	U
Copper	mg/Kg	70	**7.1**		**2.1**		**3.7**		**5.7**		**5.8**		**2.0**		**2.9**		**5.5**		**3.4**		**4.1**		**3.5**		**3.2**		**2.7**	**J**
Lead	mg/Kg	1.5	**6.4**		**4.6**		**4.9**		**7.5**		**9.8**		**4.5**	**J**	**4.8**		**4.7**		**6.1**		**4.9**		**5.5**		**4.7**		**5.5**	**J**
Zinc	mg/Kg	120	**13.5**		**12.3**		**11.0**		**16.1**		**15.6**		**10.5**		**10.8**		**14.1**		**11.7**		**13.8**		**10.7**		**12.2**		**10.8**	**J**
pH - SW9045D																												
pH	pH units	NA	**8.13**		**7.89**		**7.75**		**7.89**		**7.25**		**7.49**		**7.60**		**7.45**		**8.02**		**7.97**		**7.62**		**7.84**		**7.96**	

Attachment A.2.a. Supporting Data Table
Fort Bliss, El Paso, Texas, Biggs Army Airfield OB/OD Site I
Validated Data Summary for Subsurface Soil Disposal Feature Samples Collected March and April 2017

SAMPLE ID:		PROJECT ACTION LIMIT[1]	OBOD1-DF18-SS-01-15		OBOD1-DF18-SS-01-43		OBOD1-DF20-SS-01-17		OBOD1-DF20-SS-04-17*		OBOD1-DF20-SS-01-34		OBOD1-DF20-SS-02-8		OBOD1-DF20-SS-03-8*		OBOD1-DF20-SS-02-28		OBOD1-DF22-SS-01-13		OBOD1-DF22-SS-01-38		OBOD1-DF22-SS-02-6		OBOD1-DF22-SS-02-24		OBOD1-DF25-SS-02-10	
DATE SAMPLED:			03/30/2017		03/30/2017		03/30/2017		03/30/2017		03/30/2017		03/30/2017		03/30/2017		03/30/2017		03/29/2017		03/29/2017		03/29/2017		03/29/2017		03/29/2017	
LAB SAMPLE ID:			FA42650-7		FA42650-8		FA42650-1		FA42650-10		FA42650-2		FA42650-4		FA42650-11		FA42650-5		FA42549-7		FA42549-8		FA42549-10		FA42549-11		FA42549-1	
SAMPLE DEPTH (ft bgs):			1.25		3.58		1.42		1.42		2.83		0.67		0.67		2.33		1.08		3.17		0.50		2.0		0.83	
Polynuclear Aromatic Hydrocarbons - SW8270D-SIM	Units																											
1-Methylnaphthalene	mg/Kg	1.5	0.036	U	0.036	U	0.035	U	0.040	U	0.035	U	0.034	U	0.041	U	0.035	U	0.033	U	0.035	U	0.034	U	0.034	U	0.034	U
2-Methylnaphthalene	mg/Kg	8.5	0.036	U	0.036	U	0.035	U	0.040	U	0.035	U	0.034	U	0.041	U	0.035	U	0.033	U	0.035	U	0.034	U	0.034	U	0.034	U
Acenaphthene	mg/Kg	20	0.036	U	0.036	U	0.035	U	0.040	U	0.035	U	0.034	U	0.041	U	0.035	U	0.033	U	0.035	U	0.034	U	0.034	U	0.034	U
Acenaphthylene	mg/Kg	120	0.036	U	0.036	U	0.035	U	0.040	U	0.035	U	0.034	U	0.041	U	0.035	U	0.033	U	0.035	U	0.034	U	0.034	U	0.034	U
Anthracene	mg/Kg	6.8	0.036	U	0.036	U	0.035	U	0.040	U	0.035	U	0.034	U	0.041	U	0.035	U	0.033	U	0.035	U	0.034	U	0.034	U	0.034	U
Benzo(a)anthracene	mg/Kg	0.8	0.0072	U	0.0071	U	0.0070	U	0.0080	U	0.0070	U	0.0068	U	0.0082	U	0.0070	U	0.0066	U	0.0069	U	0.0069	U	0.0069	U	0.0068	U
Benzo(a)pyrene	mg/Kg	0.56	0.0072	U	0.0071	U	0.0070	U	0.0080	U	0.0070	U	0.0068	U	0.0082	U	0.0070	U	0.0066	U	0.0069	U	0.0069	U	0.0069	U	0.0068	U
Benzo(b)fluoranthene	mg/Kg	5.7	0.0072	U	0.0071	U	0.0070	U	0.0080	U	0.0070	U	0.0068	U	0.0082	U	0.0070	U	0.0066	U	0.0069	U	0.0069	U	0.0069	U	0.0068	U
Benzo(g,h,i)perylene	mg/Kg	24	0.0072	U	0.0071	U	0.0070	U	0.0080	U	0.0070	U	0.0068	U	0.0082	U	0.0070	U	0.0066	U	0.0069	U	0.0069	U	0.0069	U	0.0068	U
Benzo(k)fluoranthene	mg/Kg	57	0.0072	U	0.0071	U	0.0070	U	0.0080	U	0.0070	U	0.0068	U	0.0082	U	0.0070	U	0.0066	U	0.0069	U	0.0069	U	0.0069	U	0.0068	U
Chrysene	mg/Kg	2.4	0.0072	U	0.0071	U	0.0070	U	0.0080	U	0.0070	U	0.0068	U	0.0082	U	0.0070	U	0.0066	U	0.0069	U	0.0069	U	0.0069	U	0.0068	U
Dibenz(a,h)anthracene	mg/Kg	0.55	0.0072	U	0.0071	U	0.0070	U	0.0080	U	0.0070	U	0.0068	U	0.0082	U	0.0070	U	0.0066	U	0.0069	U	0.0069	U	0.0069	U	0.0068	U
Fluoranthene	mg/Kg	10	0.036	U	0.036	U	0.035	U	0.040	U	0.035	U	0.034	U	0.041	U	0.035	U	0.033	U	0.035	U	0.034	U	0.034	U	0.034	U
Fluorene	mg/Kg	30	0.036	U	0.036	U	0.035	U	0.040	U	0.035	U	0.034	U	0.041	U	0.035	U	0.033	U	0.035	U	0.034	U	0.034	U	0.034	U
Indeno(1,2,3-cd)pyrene	mg/Kg	5.7	0.0072	U	0.0071	U	0.0070	U	0.0080	U	0.0070	U	0.0068	U	0.0082	U	0.0070	U	0.0066	U	0.0069	U	0.0069	U	0.0069	U	0.0068	U
Naphthalene	mg/Kg	1.0	0.036	U	0.036	U	0.035	U	0.040	U	0.035	U	0.034	U	0.041	U	0.035	U	0.033	U	0.035	U	0.034	U	0.034	U	0.034	U
Phenanthrene	mg/Kg	5.5	0.036	U	0.036	U	0.035	U	0.040	U	0.035	U	0.034	U	0.041	U	0.035	U	0.033	U	0.035	U	0.034	U	0.034	U	0.034	U
Pyrene	mg/Kg	10	0.036	U	0.036	U	0.035	U	0.040	U	0.035	U	0.034	U	0.041	U	0.035	U	0.033	U	0.035	U	0.034	U	0.034	U	0.034	U
Explosives - SW8330A																												
1,3,5-Trinitrobenzene	mg/Kg	0.91	0.12	U	0.11	U	0.13	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
1,3-Dinitrobenzene	mg/Kg	0.20	0.12	U	0.11	U	0.13	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
2,4,6-Trinitrotoluene (TNT)	mg/Kg	0.20	0.12	U	0.11	U	0.13	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
2,4-Dinitrotoluene	mg/Kg	0.20	0.12	U	0.11	U	0.13	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
2,6-Dinitrotoluene	mg/Kg	0.20	0.12	U	0.11	U	0.13	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
2-Amino-4,6-dinitrotoluene	mg/Kg	0.20	0.12	U	0.11	U	0.13	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
2-Nitrotoluene	mg/Kg	0.20	0.12	U	0.11	U	0.13	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
3-Nitrotoluene	mg/Kg	0.92	0.12	U	0.11	U	0.13	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
4-Amino-2,6-dinitrotoluene	mg/Kg	0.20	0.12	U	0.11	U	0.13	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
4-Nitrotoluene	mg/Kg	0.22	0.12	U	0.11	U	0.13	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/Kg	0.20	0.12	U	0.11	U	0.13	UJ	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
Methyl-2,4,6-trinitrophenylnitramine (Tetryl)	mg/Kg	0.28	0.12	U	0.11	U	0.13	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
Nitrobenzene	mg/Kg	0.20	0.12	U	0.11	U	0.13	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
Nitroglycerin	mg/Kg	2.0	0.81	U	0.75	U	0.85	U	0.73	U	0.80	U	0.77	U	0.82	U	0.83	U	0.81	U	0.81	U	0.76	U	0.84	U	0.77	U
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	mg/Kg	1.2	0.12	U	0.11	U	0.13	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.12	U	0.11	U	0.13	U	0.11	U
Pentaerythritol Tetranitrate (PETN)	mg/Kg	6.2	0.81	U	0.75	U	0.85	U	0.73	U	0.80	U	0.77	U	0.82	U	0.83	U	0.81	U	0.81	U	0.76	U	0.84	U	0.77	U
Metals - SW6010C																												
Aluminum	mg/Kg	64,000	**5,560**		**6,380**		**5,350**		**5,720**		**5,760**		**3,750**		**4,370**		**6,180**		**5,740**		**6,840**		**7,130**		**6,530**		**5,010**	
Antimony	mg/Kg	2.7	**0.057**	J	1.1	U	**0.085**	J	0.23	U	0.95	U	**0.17**	J	**0.18**	J	0.24	U	0.37	U	0.44	U	0.47	U	0.24	U	0.19	U
Copper	mg/Kg	70	**3.2**		**3.3**	J	**3.2**		**3.1**		**2.8**		**5.8**		**6.6**		**3.6**		**3.4**		**3.6**		**5.7**		**3.8**		**3.4**	
Lead	mg/Kg	1.5	**5.1**		**4.9**		**5.1**		**4.8**		**4.6**		**23.4**		**15.1**		**5.2**		**4.4**		**5.4**		**5.8**		**5.6**		**4.3**	
Zinc	mg/Kg	120	**12.2**		**13.3**		**12.1**		**12.6**		**13.6**		**23.3**		**25.3**		**13.2**		**13.7**		**15.5**		**17.0**		**14.2**		**11.7**	
pH - SW9045D																												
pH	pH units	NA	**7.90**		**7.37**		**7.99**		**7.87**		**7.95**		**7.97**		**8.10**		**8.00**		**7.87**		**7.58**		**8.13**		**8.00**		**7.39**	

Attachment A.2.a. Supporting Data Table
Fort Bliss, El Paso, Texas, Biggs Army Airfield OB/OD Site I
Validated Data Summary for Subsurface Soil Disposal Feature Samples Collected March and April 2017

SAMPLE ID:		PROJECT ACTION LIMIT[1]	OBOD1-DF25-SS-02-31		OBOD1-DF25-SS-03-17		OBOD1-DF25-SS-03-47		OBOD1-DF29-SS-01-12		OBOD1-DF29-SS-02-16		OBOD1-DF29-SS-02-28	
DATE SAMPLED:			03/29/2017		03/29/2017		03/29/2017		03/27/2017		03/27/2017		03/27/2017	
LAB SAMPLE ID:			FA42549-2		FA42549-4		FA42549-5		FA42476-1		FA42476-2		FA42476-3	
SAMPLE DEPTH (ft bgs):			2.58		1.42		3.92		1.0		1.33		2.33	
	Units													
Polynuclear Aromatic Hydrocarbons - SW8270D-SIM														
1-Methylnaphthalene	mg/Kg	1.5	0.035	U	0.034	U	0.035	U	0.034	U	0.033	U	0.035	U
2-Methylnaphthalene	mg/Kg	8.5	0.035	U	0.034	U	0.035	U	0.034	U	0.033	U	0.035	U
Acenaphthene	mg/Kg	20	0.035	U	0.034	U	0.035	U	0.034	U	0.033	U	0.035	U
Acenaphthylene	mg/Kg	120	0.035	U	0.034	U	0.035	U	0.034	U	0.033	U	0.035	U
Anthracene	mg/Kg	6.8	0.035	U	0.034	U	0.035	U	0.034	U	0.033	U	0.035	U
Benzo(a)anthracene	mg/Kg	0.8	0.0070	U	0.0068	U	0.0071	U	**0.046**		0.0067	U	0.0070	U
Benzo(a)pyrene	mg/Kg	0.56	0.0070	U	0.0068	U	0.0071	U	**0.046**		0.0067	U	0.0070	U
Benzo(b)fluoranthene	mg/Kg	5.7	0.0070	U	0.0068	U	0.0071	U	**0.065**		0.0067	U	0.0070	U
Benzo(g,h,i)perylene	mg/Kg	24	0.0070	U	0.0068	U	0.0071	U	**0.037**		0.0067	U	0.0070	U
Benzo(k)fluoranthene	mg/Kg	57	0.0070	U	0.0068	U	0.0071	U	**0.021**		0.0067	U	0.0070	U
Chrysene	mg/Kg	2.4	0.0070	U	0.0068	U	0.0071	U	**0.048**		0.0067	U	0.0070	U
Dibenz(a,h)anthracene	mg/Kg	0.55	0.0070	U	0.0068	U	0.0071	U	**0.0087**	J	0.0067	U	0.0070	U
Fluoranthene	mg/Kg	10	0.035	U	0.034	U	0.035	U	**0.11**		0.033	U	0.035	U
Fluorene	mg/Kg	30	0.035	U	0.034	U	0.035	U	0.034	U	0.033	U	0.035	U
Indeno(1,2,3-cd)pyrene	mg/Kg	5.7	0.0070	U	0.0068	U	0.0071	U	**0.044**		0.0067	U	0.0070	U
Naphthalene	mg/Kg	1.0	0.035	U	0.034	U	0.035	U	0.034	U	0.033	U	0.035	U
Phenanthrene	mg/Kg	5.5	0.035	U	0.034	U	0.035	U	**0.035**	J	0.033	U	0.035	U
Pyrene	mg/Kg	10	0.035	U	0.034	U	0.035	U	**0.081**		0.033	U	0.035	U
Explosives - SW8330A														
1,3,5-Trinitrobenzene	mg/Kg	0.91	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
1,3-Dinitrobenzene	mg/Kg	0.20	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
2,4,6-Trinitrotoluene (TNT)	mg/Kg	0.20	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
2,4-Dinitrotoluene	mg/Kg	0.20	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
2,6-Dinitrotoluene	mg/Kg	0.20	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
2-Amino-4,6-dinitrotoluene	mg/Kg	0.20	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
2-Nitrotoluene	mg/Kg	0.20	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
3-Nitrotoluene	mg/Kg	0.92	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
4-Amino-2,6-dinitrotoluene	mg/Kg	0.20	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
4-Nitrotoluene	mg/Kg	0.22	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/Kg	0.20	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
Methyl-2,4,6-trinitrophenylnitramine (Tetryl)	mg/Kg	0.28	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
Nitrobenzene	mg/Kg	0.20	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
Nitroglycerin	mg/Kg	2.0	0.94	U	0.86	U	0.84	U	0.87	U	0.69	U	0.92	U
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	mg/Kg	1.2	0.14	U	0.13	U	0.13	U	0.13	U	0.10	U	0.14	U
Pentaerythritol Tetranitrate (PETN)	mg/Kg	6.2	0.94	U	0.86	U	0.84	U	0.87	U	0.69	U	0.92	U
Metals - SW6010C														
Aluminum	mg/Kg	64,000	**5,270**		**4,910**		**4,080**		**4,050**		**4,680**		**5,290**	
Antimony	mg/Kg	2.7	0.45	U	**0.074**	J	**0.14**	J	**0.20**	J	**0.065**	J	0.21	U
Copper	mg/Kg	70	**3.0**		**9.7**		**6.8**		**4.7**		**2.5**		**3.0**	
Lead	mg/Kg	1.5	**4.5**		**7.5**		**8.0**		**7.5**		**3.8**		**4.5**	
Zinc	mg/Kg	120	**12.9**		**14.8**		**15.3**		**10.1**		**10.7**		**11.3**	
pH - SW9045D														
pH	pH units	NA	**7.34**		**7.78**		**7.55**		**7.91**		**7.78**		**8.01**	

QA NOTES AND DATA QUALIFIERS:
(NO CODE) - Confirmed identification.
U - Analyte was analyzed for but not detected above the reported limit of detection (LOD).
UJ - Analyte not detected, reported LOD may be inaccurate or imprecise.
J - Analyte detected, estimated concentration.
* - Field triplicate sample.

Detections are bolded.
Detections above the PAL are highlighted.
mg/kg - milligrams per kilogram.
ft bgs -feet below ground surface.

NOTES:
[1] Project Action Limits are the most conservative screening value among the applicable Human Health Screening Values (TCEQ TRRP Tier 1, 30-acre source area Residential Soil PCLs and Tier 1, 30-acre source area Residential Protection of Groundwater PCLs: http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html) and Ecological Screening Values (TCEQ Ecological Risk Assessment Program, Draft: Conducting Ecological Risk Assessments at Remediation Sites in Texas, Table 3.4 using lowest value of earthworm and plant. Revised Jan 2014. RG 263: https://www.tceq.texas.gov/assets/public/remediation/trrp/rg263-draft.pdf. If ecological value was not available from TCEQ, used the LANL EcoRisk Database, Release 3.2, October 2014: http://www.lanl.gov/community-environment/environmental-stewardship/protection/eco-risk-assessment.php). Where the PAL determined from these values was less than the LOQ, then the LOQ was used as the PAL. This is consistent with TRRP.

Attachment A.2.b - Supporting Data Table
Validated Data Summary for Incremental Soil Samples Collected March and April 2017

SITE:			Ambient Location					Biggs OB/OD Site I																						
LOCATION:			OBOD1-AU01					OBOD1-AU02	OBOD1-AU03	OBOD1-SU01		OBOD1-SU02		OBOD1-SU03		OBOD1-SU04		OBOD1-SU05		OBOD1-SU06		OBOD1-SU07		OBOD1-SU08						OBOD1-SU09	
SAMPLE ID:		PROJECT ACTION LIMIT[1]	OBOD1-AU01-SS-01*		OBOD1-AU01-SS-02*		OBOD1-AU01-SS-03*	OBOD1-AU02-SS-01	OBOD1-AU03-SS-01	OBOD1-SU01-SS-01		OBOD1-SU02-SS-01		OBOD1-SU03-SS-01		OBOD1-SU04-SS-01		OBOD1-SU05-SS-01		OBOD1-SU06-SS-01		OBOD1-SU07-SS-01		OBOD1-SU08-SS-01*		OBOD1-SU08-SS-02*		OBOD1-SU08-SS-03*		OBOD1-SU09-SS-01	
DATE SAMPLED:			03/15/2017		03/15/2017		03/15/2017	03/15/2017	03/15/2017	03/13/2017		03/13/2017		03/13/2017		03/14/2017		03/14/2017		03/14/2017		03/14/2017		03/15/2017		03/15/2017		03/15/2017		03/16/2017	
LAB SAMPLE ID:			FA42100-1		FA42100-2		FA42100-3	FA42100-4	FA42100-5	FA42067-1		FA42067-2		FA42067-3		FA42067-4		FA42067-6		FA42067-7		FA42067-5		FA42152-1		FA42152-2		FA42152-3		FA42152-9	
SAMPLE DEPTH (ft bgs):			0 - 0.5		0 - 0.5		0 - 0.5	0 - 0.5	0 - 0.5	0 - 0.5		0 - 0.5		0 - 0.5		0 - 0.5		0 - 0.5		0 - 0.5		0 - 0.5		0 - 0.5		0 - 0.5		0 - 0.5		0 - 0.5	
	Units																													
Polynuclear Aromatic Hydrocarbons - SW8270D-SIM																														
1-Methylnaphthalene	mg/Kg	1.5	0.034	U	0.033	U	0.033	U	0.034 U	0.034	U	0.033	U	0.033	U	0.034	U	0.033	U	0.034	U	0.032	U	0.033	U	0.033	U	0.033	U	0.033	U
2-Methylnaphthalene	mg/Kg	8.5	0.034	U	0.033	U	0.033	U	0.034 U	0.034	U	0.033	U	0.033	U	0.034	U	0.033	U	0.034	U	0.032	U	0.033	U	0.033	U	0.033	U	0.033	U
Acenaphthene	mg/Kg	20	0.034	U	0.033	U	0.033	U	0.034 U	0.034	U	0.033	U	0.033	U	0.034	U	0.033	U	0.034	U	0.032	U	0.033	U	0.033	U	0.033	U	0.033	U
Acenaphthylene	mg/Kg	120	0.034	U	0.033	U	0.033	U	0.034 U	0.034	U	0.033	U	0.033	U	0.034	U	0.033	U	0.034	U	0.032	U	0.033	U	0.033	U	0.033	U	0.033	U
Anthracene	mg/Kg	6.8	0.034	U	0.033	U	0.033	U	0.034 U	0.034	U	0.033	U	0.033	U	0.034	U	0.033	U	0.034	U	0.032	U	0.033	U	0.033	U	0.033	U	0.033	U
Benzo(a)anthracene	mg/Kg	0.80	**0.0034**	J	0.0066	U	0.0065	U	0.0068 U	**0.0045**	J	0.0068	U	0.0066	U	**0.012**	J	0.0068	U	0.0067	U	0.0068	U	0.0065	U	0.0067	U	0.0066	U	0.0066	U	0.0067	U
Benzo(a)pyrene	mg/Kg	0.56	**0.0047**	J	**0.0051**	J	0.0065	U	0.0068 U	**0.0056**	J	0.0068	U	0.0066	U	**0.011**	J	0.0068	U	0.0067	U	0.0068	U	0.0065	U	0.0067	U	0.0066	U	0.0066	U	**0.0044**	J
Benzo(b)fluoranthene	mg/Kg	5.7	**0.0084**	J	**0.0098**	J	**0.0060**	J	**0.0058** J	**0.010**	J	**0.0058**	J	**0.0048**	J	**0.017**		**0.0044**	J	**0.0053**	J	0.0068	U	0.0065	U	**0.0044**	J	**0.0035**	J	**0.0038**	J	**0.0081**	J
Benzo(g,h,i)perylene	mg/Kg	24	**0.0042**	J	**0.0054**	J	0.0065	U	0.0068 U	**0.0051**	J	0.0068	U	0.0066	U	**0.013**		0.0068	U	0.0067	U	0.0068	U	0.0065	U	0.0067	U	0.0066	U	0.0066	U	**0.0085**	J
Benzo(k)fluoranthene	mg/Kg	57	0.0068	U	0.0066	U	0.0065	U	0.0068 U	**0.0038**	J	0.0068	U	0.0066	U	**0.010**	J	0.0068	U	0.0067	U	0.0068	U	0.0065	U	0.0067	U	0.0066	U	**0.0039**	J	0.0067	U
Chrysene	mg/Kg	2.4	**0.0056**	J	**0.0063**	J	**0.0038**	J	**0.0038** J	**0.0065**	J	**0.0043**	J	0.0066	U	**0.013**		0.0068	U	0.0067	U	0.0068	U	0.0065	U	0.0067	U	0.0066	U	0.0066	U	**0.0045**	J
Dibenz(a,h)anthracene	mg/Kg	0.55	0.0068	U	0.0066	U	0.0065	U	0.0068 UJ	0.0068	U	0.0068	U	0.0066	U	**0.0055**	J	0.0068	U	0.0067	U	0.0068	U	0.0065	U	0.0067	U	0.0066	U	0.0066	U	0.0067	U
Fluoranthene	mg/Kg	10	0.034	U	0.033	U	0.033	U	0.034 U	0.034	U	0.034	U	0.033	U	**0.024**	J	0.034	U	0.033	U	0.034	U	0.032	U	0.033	U	0.033	U	0.033	U	0.033	U
Fluorene	mg/Kg	30	0.034	U	0.033	U	0.033	U	0.034 U	0.034	U	0.033	U	0.033	U	0.034	U	0.033	U	0.034	U	0.032	U	0.033	U	0.033	U	0.033	U	0.033	U	0.033	U
Indeno(1,2,3-cd)pyrene	mg/Kg	5.7	**0.0041**	J	**0.0055**	J	0.0065	U	0.0068 U	**0.0053**	J	0.0068	U	0.0066	U	**0.013**		0.0068	U	0.0067	U	0.0068	U	0.0065	U	0.0067	U	0.0066	U	0.0066	U	**0.0046**	J
Naphthalene	mg/Kg	1.0	0.034	U	0.033	U	0.033	U	0.034 U	0.034	U	0.033	U	0.033	U	0.034	U	0.033	U	0.034	U	0.032	U	0.033	U	0.033	U	0.033	U	0.033	U	0.033	U
Phenanthrene	mg/Kg	5.5	0.034	U	0.033	U	0.033	U	0.034 U	0.034	U	0.033	U	0.033	U	0.034	U	0.033	U	0.034	U	0.032	U	0.033	U	0.033	U	0.033	U	0.033	U	0.033	U
Pyrene	mg/Kg	10	0.034	U	0.033	U	0.033	U	0.034 UJ	0.034	U	0.033	U	**0.019**	J	0.034	U	0.033	U	0.034	U	0.032	U	0.033	U	0.033	U	0.033	U	0.033	U	0.033	U
Explosives - SW8330B																														
1,3,5-Trinitrobenzene	mg/Kg	0.91	--		--		--	--	--	0.074	UJ	0.075	UJ	0.075	UJ	0.074	UJ	0.075	UJ	0.074	UJ	0.075	UJ	0.074	UJ	0.075	UJ	0.075	UJ	0.074	U
1,3-Dinitrobenzene	mg/Kg	0.10	--		--		--	--	--	0.074	U	0.075	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.075	U	0.074	U
2,4,6-Trinitrotoluene (TNT)	mg/Kg	0.10	--		--		--	--	--	0.074	U	0.075	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.074	UJ	0.075	UJ	0.075	UJ	0.074	UJ
2,4-Dinitrotoluene	mg/Kg	0.10	--		--		--	--	--	0.074	U	0.075	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.075	U	0.074	U
2,6-Dinitrotoluene	mg/Kg	0.10	--		--		--	--	--	0.074	U	0.075	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.075	U	0.074	U
2-Amino-4,6-dinitrotoluene	mg/Kg	0.10	--		--		--	--	--	0.074	U	0.075	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.075	U	0.074	U
2-Nitrotoluene	mg/Kg	0.10	--		--		--	--	--	0.074	U	0.075	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.075	U	0.074	U
3-Nitrotoluene	mg/Kg	0.92	--		--		--	--	--	0.074	U	0.075	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.075	U	0.074	U
4-Amino-2,6-dinitrotoluene	mg/Kg	0.10	--		--		--	--	--	0.074	U	0.075	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.074	UJ	0.075	UJ	0.075	UJ	0.074	UJ
4-Nitrotoluene	mg/Kg	0.22	--		--		--	--	--	0.074	U	0.075	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.075	U	0.074	U
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	mg/Kg	0.10	--		--		--	--	--	0.074	U	0.075	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.075	U	0.074	U
Methyl-2,4,6-trinitrophenylnitramine (Tetryl)	mg/Kg	0.28	--		--		--	--	--	0.074	UJ	0.075	UJ	0.075	UJ	0.074	UJ	0.075	UJ	0.074	UJ	0.075	UJ	0.074	UJ	0.075	UJ	0.075	UJ	0.074	UJ
Nitrobenzene	mg/Kg	0.18	--		--		--	--	--	0.074	U	0.075	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.075	U	0.074	U
Nitroglycerin	mg/Kg	1.0	--		--		--	--	--	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
Octahydro-1,3,5,7-tetranitro-1,3,5,7-tetrazocine (HMX)	mg/Kg	1.2	--		--		--	--	--	0.074	U	0.075	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.074	U	0.075	U	0.075	U	0.074	U
Pentaerythritol Tetranitrate (PETN)	mg/Kg	6.2	--		--		--	--	--	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
Metals - SW6010C																														
Aluminum	mg/Kg	64,000	--		--		--	--	--	**5,090**		**4,840**		**5,110**		**3,850**		**4,180**		**4,100**		**4,920**		**4,130**		**4,060**		**3,950**		**4,330**	
Antimony	mg/Kg	2.7	--		--		--	--	--	**0.096**	J	**0.071**	J	**0.091**	J	**0.059**	J	**0.093**	J	0.22	U	**0.073**	J	**0.053**	J	0.23	U	**0.050**	J	**0.071**	J
Copper	mg/Kg	70	--		--		--	--	--	**10.6**		**9.0**		**13.8**		**8.4**		**6.0**		**6.6**		**8.2**		**6.3**		**5.8**		**5.9**		**7.5**	
Lead	mg/Kg	1.5	--		--		--	--	--	**10.6**		**10.8**		**11.4**		**9.8**		**9.9**		**9.0**		**10.7**		**9.4**		**8.9**		**9.5**		**12.7**	
Zinc	mg/Kg	120	--		--		--	--	--	**20.2**		**19.7**		**21.3**		**18.0**		**17.3**		**15.0**		**17.1**		**15.3**		**14.8**		**14.7**		**16.9**	
pH - SW9045D																														
pH	pH units	NA	--		--		--	--	--	**8.26**		**8.21**		**8.26**		**8.33**		**8.24**		**8.21**		**8.22**		**8.18**		**8.22**		**8.22**		**8.29**	

QA NOTES AND DATA QUALIFIERS:

(NO CODE) - Confirmed identification.
U - Analyte was analyzed for but not detected above the reported limit of detection (LOD).
UJ - Analyte not detected, reported LOD may be inaccurate or imprecise.
J - Analyte detected, estimated concentration.
* - Field triplicate sample.
-- - Sample not tested for this analyte.
Detections are bolded.

Detections above the PAL are highlighted.

NOTES:

[1] Project Action Limits are the most conservative screening value among the applicable Human Health Screening Values (TCEQ TRRP Tier 1, 30-acre source area Residential Soil PCLs and Tier 1, 30-acre source area Residential Protection of Groundwater PCLs: http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html) and Ecological Screening Values (TCEQ Ecological Risk Assessment Program, Draft: Conducting Ecological Risk Assessments at Remediation Sites in Texas, Table 3.4 using lowest value of earthworm and plant. Revised Jan 2014. RG 263: https://www.tceq.texas.gov/assets/public/remediation/trrp/rg263-draft.pdf. If ecological value was not available from TCEQ, used the LANL EcoRisk Database, Release 3.2, October 2014: http://www.lanl.gov/community-environment/environmental-stewardship/protection/eco-risk-assessment.php). Where the PAL determined from these values was less than the LOQ, then the LOQ was used as the PAL. This is consistent with TRRP.

mg/kg - milligrams per kilogram.
ft bgs -feet below ground surface.

Attachment A.3. ProUCL Supporting Documentation – Lead

UCL Statistics for Uncensored Full Data Sets

User Selected Options	
Date/Time of Computation	ProUCL 5.16/28/2017 2:55:17 PM
From File	BlissLandfill_input.xls
Full Precision	OFF
Confidence Coefficient	95%
Number of Bootstrap Operations	2000

Lead

General Statistics

Total Number of Observations	10	Number of Distinct Observations	10
		Number of Missing Observations	0
Minimum	3.4	Mean	9.19
Maximum	42.9	Median	5.3
SD	12	Std. Error of Mean	3.795
Coefficient of Variation	1.306	Skewness	3.019

Normal GOF Test

Shapiro Wilk Test Statistic	0.49	**Shapiro Wilk GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Normal at 5% Significance Level	
Lilliefors Test Statistic	0.408	**Lilliefors GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Normal at 5% Significance Level	

Data Not Normal at 5% Significance Level

Assuming Normal Distribution

95% Normal UCL		**95% UCLs (Adjusted for Skewness)**	
95% Student's-t UCL	16.15	95% Adjusted-CLT UCL (Chen-1995)	19.3
		95% Modified-t UCL (Johnson-1978)	16.75

Gamma GOF Test

A-D Test Statistic	1.719	**Anderson-Darling Gamma GOF Test**	
5% A-D Critical Value	0.739	Data Not Gamma Distributed at 5% Significance Level	
K-S Test Statistic	0.391	**Kolmogorov-Smirnov Gamma GOF Test**	
5% K-S Critical Value	0.271	Data Not Gamma Distributed at 5% Significance Level	

Data Not Gamma Distributed at 5% Significance Level

Gamma Statistics

k hat (MLE)	1.529	k star (bias corrected MLE)	1.137
Theta hat (MLE)	6.011	Theta star (bias corrected MLE)	8.083
nu hat (MLE)	30.58	nu star (bias corrected)	22.74
MLE Mean (bias corrected)	9.19	MLE Sd (bias corrected)	8.619
		Approximate Chi Square Value (0.05)	12.89
Adjusted Level of Significance	0.0267	Adjusted Chi Square Value	11.62

Assuming Gamma Distribution

95% Approximate Gamma UCL (use when n>=50))	16.21	95% Adjusted Gamma UCL (use when n<50)	17.98

Lognormal GOF Test

Shapiro Wilk Test Statistic	0.711	**Shapiro Wilk Lognormal GOF Test**	
5% Shapiro Wilk Critical Value	0.842	Data Not Lognormal at 5% Significance Level	
Lilliefors Test Statistic	0.345	**Lilliefors Lognormal GOF Test**	
5% Lilliefors Critical Value	0.262	Data Not Lognormal at 5% Significance Level	

Data Not Lognormal at 5% Significance Level

Lognormal Statistics

Minimum of Logged Data	1.224	Mean of logged Data	1.857
Maximum of Logged Data	3.759	SD of logged Data	0.731

Assuming Lognormal Distribution

95% H-UCL	15.72	90% Chebyshev (MVUE) UCL	13.91
95% Chebyshev (MVUE) UCL	16.55	97.5% Chebyshev (MVUE) UCL	20.2
99% Chebyshev (MVUE) UCL	27.37		

Nonparametric Distribution Free UCL Statistics

Data do not follow a Discernible Distribution (0.05)

Nonparametric Distribution Free UCLs

95% CLT UCL	15.43	95% Jackknife UCL	16.15
95% Standard Bootstrap UCL	15.11	95% Bootstrap-t UCL	78.33
95% Hall's Bootstrap UCL	58.07	95% Percentile Bootstrap UCL	16.34
95% BCA Bootstrap UCL	20.09		
90% Chebyshev(Mean, Sd) UCL	20.58	95% Chebyshev(Mean, Sd) UCL	25.73
97.5% Chebyshev(Mean, Sd) UCL	32.89	99% Chebyshev(Mean, Sd) UCL	46.95

Suggested UCL to Use

95% Chebyshev (Mean, Sd) UCL	25.73		

Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.

Recommendations are based upon data size, data distribution, and skewness.

These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).

However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.

APPENDIX D
TIER 1 EXCLUSION CRITERIA CHECKLIST AND SUPPORTING DOCUMENTATION

Appendix D: Tier 1 Exclusion Criteria Checklist

Figure: 30 TAC '350.77(b)

TIER 1: Exclusion Criteria Checklist

Name of Facility:
Far East Illegal Dump Site at Fort Bliss, TX (CCFTBL-001)

Affected Property Location:
The Site is located approximately 17 miles northeast of the City of El Paso, Texas and is located in far eastern Fort Bliss, approximately 15 miles northeast of the main cantonment area. The Site is located in El Paso County.

Mailing Address:
Directorate of Public Works, Fort Bliss
1733 Pleasonton Rd. Building 622
USAG Fort Bliss, TX 79916

TCEQ Case Tracking #s:
N/A

Solid Waste Registration #s:
63003

Voluntary Cleanup Program #:
N/A

EPA I.D. #s:
TX4213720101

PART I. Affected Property Identification and Background Information

1) Provide a description of the specific area of the response action and the nature of the release. Include estimated acreage of the affected property and the facility property, and a description of the type of facility and/or operation associated with the affected property. Also describe the location of the affected property with respect to the facility property boundaries and public roadways.

*The Site is located approximately 17 miles northeast of the City of El Paso, Texas and is located in an undeveloped area in far eastern Fort Bliss, approximately 15 miles northeast of the main cantonment area (**RI Report Figure 1-1**). The site is relatively flat with low-relief type mounding/undulating topography roughly one to four feet in height, with scattered desert scrub brush throughout. The Site is estimated to be approximately 2.24-acres. The Site includes a three-strand, 12.5-gauge, smooth-wire fence with a doublewide gate, which was installed in 2014. The site is not currently in use. It is projected that the land use for this area will remain unchanged. There is very little documentation on the history of Site activities. According to a 2006 Memorandum to File (FTBL, 2006), a request was issued for Industrial Hygiene Service and Environmental Health Services at William Beaumont Army Medical Center to perform an inspection of a training site approximately 24 miles from FTBL. No information is available on the historic operation or the source of the illegal dumping. The site is approximately 2 miles north of the FTBL boundary. According to aerial photography, the nearest residential development is located approximately 2 miles south of the Site, outside the FTBL boundary. The nearest public roadway is approximately 2 miles south of the Site.*

Reference:
Fort Bliss (FTBL), 2006. Memorandum to File: Training Area Inspection of Medical Waste by Industrial Hygiene, July 2006.

Attach available USGS topographic maps and/or aerial or other affected property photographs to this form to depict the affected property and surrounding area. Indicate attachments:

☒ Topo map ☒ Aerial photo ☐ Other

1995 USGS historic topographic map, Nations East Well, TX
2017 Google Earth Pro Aerial Photography

2) Identify environmental media known or suspected to contain chemicals of concern (COCs) at the present time. Check all that apply:

Known/Suspected COC Location	Based on sampling data?	
☐ Soil < 5 ft below ground surface	☒ Yes	☐ No
☐ Soil >5 ft below ground surface	☐ Yes	☐ No
☐ Groundwater	☐ Yes	☐ No
☐ Surface Water/Sediments	☐ Yes	☐ No

Explain (previously submitted information may be referenced):

Based on Preliminary Assessment data (summarized below), metals in soil were identified as suspected COCs at the site. However, the Remedial Investigation Report (also summarized below) did not identify any contaminants of potential concern in soil (less than 5 feet bgs). Therefore, there are no known COCs at the present time in soil.

2014 Preliminary Assessment Summary:
A Preliminary Assessment (PA) of the site was performed in 2014. The PA documented several low piles of weathered partially buried debris (empty broken medicine bottles, old syringes, needles; as well as, old cans, various bottles, and vehicle tires and parts), that might pose an environmental health and safety hazard at the Site. Through visual observation, the debris appeared to have been dumped on the ground surface with no excavation or trenched burial. Over time the waste piles had become partially covered and mixed with wind-blown deposits, scattered desert scrub, and vegetation growing through the piles.

The PA report detailed the planning and collection process for 12 soil samples; six surface soil (SS = 0-6 inches)

and six sub-surface soil (SB = 6-24 inches) samples. The samples were analyzed for volatile organic compounds (VOCs) using USEPA method SW-846 8260, semi-volatile organic compounds (SVOCs) using USEPA method SW-846 8270, Pesticides using USEPA method SW-846 8081A, Herbicides using USEPA method SW- 846 8151A, polychlorinated biphenyls (PCBs) using USEPA method SW-846 8082, eight Resource Conservation and Recovery Act (RCRA) Metals using USEPA method SW-846 6020, Reactivity for Cyanide USEPA method SW-846 7.3.3, Reactivity for sulfide USEPA method SW-846 7.3.4, Corrosivity USEPA method SW-846 9045B, Ignitability USEPA method SW-846 1010A, and Total Petroleum Hydrocarbons (TPH) by Texas method 1005/1006.

The soil sampling results at the Site were predominantly below laboratory detection limits for the majority of samples. Sampling results for metals (barium, cadmium, lead, mercury, selenium, and silver) exhibited concentrations below USEPA screening levels for residential soils in all samples. Arsenic exceeded the USEPA screening levels for residential soils of 0.67 milligram per kilogram (mg/kg) in all samples, and slightly exceeded the 3.0 mg/kg industrial level in surface soils at two locations at concentrations of 4.37 mg/kg and 3.41 mg/kg. However, in all samples arsenic remained below the Texas Statewide background level of 5.90 mg/kg (Conner et al., 1975).

Results for chromium ranged from 3.35 mg/kg to 24.7 mg/kg and all sample analytical results show chromium concentrations below Texas background listed as 30 mg/kg. Analytical results show lead below the USEPA residential soil screening level of 400 mg/kg in all samples except one surface soil sample, which exceeded the industrial screening level of 800 mg/kg with a concentration of 875 mg/kg. Seven samples exhibited lead levels above the Texas State background of 15 mg/kg ranging from 134 mg/kg to 875 mg/kg in surface soil and 29.7 mg/kg to 145 mg/kg in subsurface soil.

Mercury concentrations were less than both the USEPA residential screening level of 9,400 micrograms per kilogram (µg/kg) and the state background (40 µg/kg) in all samples except for one surface soil sample, which was below USEPA screening levels but slightly exceeded the state-wide background with a concentration of 40.2 µg/kg.

No samples exhibited concentrations of PCBs, VOCs, SVOCs, Pesticides, or Herbicides at or above the USEPA screening limits for residential soils. USEPA does not have screening levels for TPH; therefore, Texas Commission on Environmental Quality (TCEQ) Texas Risk Reduction Program (TRRP) Tier 1 Protective Concentration Levels (PCLs) were used for the TPH evaluation. Only one surface soil sample, exhibited the presence of TPH. The PA photo log shows that that soil sample was collected at a spot of stained, lumpy soil, which could be related to material such as a small dump of oil or heavy oily substance, or decomposing oily rags.

All samples showed no reactive cyanide or sulfide constituent. Ignitability was negative for all samples. Analysis of each sample's pH indicated all samples to be noncorrosive, i.e., neither highly acidic nor highly basic.

The PA concluded that based on the limited sample results generated during this PA, and depending on whether there may be any future changes in site land use planned, further investigation of arsenic and lead might be warranted (OTIE, 2014). All other metal compound concentrations were below USEPA residential soil screening levels. Refer to Tables 1 and 2 excerpts from the PA provided with the Tier 1 Ecochecklist Supporting Documentation.

2016 RI Report Summary:

Using the data from the PA, a preliminary conceptual site model (CSM) was developed for the Site during the Remedial Investigation United Federal Policy Quality Assurance Project Plan (UFP-QAPP) development. The preliminary CSM identified three potentially complete exposure pathways (ingestion, dermal contact, and inhalation of particulates) for low level concentrations of metals (arsenic and lead) present in surface and subsurface soils at the Site. The low-level characterization of the contaminants was based on soil sample results collected during the PA. Because depth to groundwater at the site is approximately 360 – 390 feet below ground surface (bgs) and the anticipated contaminants are relatively immobile in an arid environment, it is highly unlikely they would migrate to the deep groundwater at the site. Therefore, the ground exposure pathway was assumed to be incomplete (CAPE, 2016).

The UFP-QAPP identified target compounds based on analytical groups associated with general refuse and industrial waste. Surface (0 – 0.5 feet bgs) and sub-surface soil (2 – 3 feet bgs) were analyzed for Target Compound

List (TCL) VOCs by USEPA SW 5035/8260, TCL SVOCs by USEPA SW 3541/8270, TPH by TX method 1005/1006, PCBs by USEPA SW 3541/8082, TCL pesticides by USEPA SW 3541/8081, TCL herbicides by USEPA SW 3550/8151, and Target Analyte List (TAL) metals by USEPA SW 6020/7000.

Data from the RI were screened against the most conservative screening value from the applicable human health screening values for residential soil and protection of groundwater, and ecological screening values. The human health screening values were selected from the TCEQ TRRP, Tier 1 PCLs for residential soil, 30-acre source area for direct contact ($^{Tot}Soil_{Comb}$) and protection of groundwater ($^{GW}Soil_{Ing}$). The ecological screening values were from the ecological benchmarks from TCEQ Ecological Risk Assessment Program, Conducting Ecological Risk Assessments at Remediation Sites in Texas, January 2017 Ecological Benchmark Soil Table (RF-263-B). The ecological screening value is the lowest value of earthworm and plant. If the ecological value was lower than the TRRP Texas-Specific Background Concentration, the ecological PAL is then the background concentration. Additionally, if analytes were detected at concentrations greater than screening values, those analytes were also compared to maximum background concentrations to determine if the measured concentrations are evidence of a release, or are consistent with naturally occurring concentrations. The TRRP Texas-Specific Background Concentrations and the maximum site-specific background sample results are the background concentration values used in the background comparison.

TPH, SVOCs, herbicides, and PCBs were not detected in any of the soil samples collected during the RI. Two VOCs and three pesticides were detected in surface and subsurface soil samples. However, all detections were several orders of magnitude below human health and ecological screening values.

Site-related metals concentrations (chromium, lead, selenium, and mercury) were detected in surface soil (0 – 0.5 feet bgs) above human health screening values and ecological screening values. Site-related metals concentrations (arsenic, barium, lead, selenium, and mercury) were detected in subsurface soil (2 – 3 feet bgs) above human health screening values and ecological screening values. However, following background concentration comparisons, only chromium, lead, and selenium exceeded the TRRP Texas-Specific Background concentrations and maximum site-specific background concentrations. Refer to the Figure 4-1 from the RI Report provided with the Tier 1 Ecochecklist Supporting Documentation for sample locations discussed below.

Chromium and lead concentrations exceeding screening levels, TRRP Texas-specific background concentrations, and the surface soil site-specific maximum background concentrations are limited to only one grid, Grid 3, in surface soil (0 – 0.5 feet bgs) only. No other surface soil samples exceeded the screening levels or background concentrations. Subsurface soil (2 – 3 feet bgs) chromium and lead concentrations in Grid 3 were below TRRP Texas-specific background concentrations. Therefore, the localized chromium and lead concentrations exceeding background values are delineated vertically (0 – 0.5 feet bgs) and horizontally within Grid 3.

Selenium concentrations in both surface (0 – 0.5 feet bgs) and subsurface (2 – 3 feet bgs) were consistently detected above screening levels and the TRRP Texas-specific background concentration in all locations, including background samples, at the Site. Concentrations from all sample locations ranged from 1.1 mg/kg to 2.3 mg/kg. However, selenium concentrations in the three background samples ranged from 1.4 mg/kg to 2.0 mg/kg. Given the consistent selenium concentration distribution across the site (horizontally and vertically), it is likely selenium concentrations are consistent with a localized background concentration that is elevated above the established TRRP Texas-Specific Background. However, because selenium concentrations exceeded TRRP Texas-specific background concentrations it was evaluated as a potential contaminant in the Risk Assessment.

The three metals which exceeded screening levels and TRRP Texas-Specific Background concentrations in one or more samples were further evaluated in the Risk Assessment. For chromium, the site mean/median concentration calculated by the Wilcoxon Ranked Sum Test is less than the TRRP Texas-Specific Background concentration. For lead, TCEQ's Tier 2 PCL equations recalculated the $^{GW}Soil_{Ing}$ screening level using a K_d value representative of the pH from Fort Bliss (instead of the generic K_d value). The Tier 2 PCL for lead was determined to be 34.8 mg/kg. The 95% UCL for surface soil lead concentrations was determined to be less than the Tier 2 PCL at 25.7 mg/kg. For selenium, the maximum detected selenium concentration (2.3 mg/kg) is less than three times the mean of the site-specific background samples (5.0 mg/kg). Therefore, no COPCs were identified in the Risk Assessment.

As evaluated in the risk assessment, site-related metals concentrations (chromium and lead) are limited to surface

soil in Grid 3. When the site is evaluated in its entirety using statistical methods, no metals exceed the TRRP Texas-specific background concentration (chromium) or the Tier 2 PCL (lead). Selenium concentrations detected during the RI are within the acceptable background range, which is less than three times the maximum site-specific background concentration. Therefore, nature and extent of potential environmental contamination is complete. Based on the Risk Assessment conclusions, there is no unacceptable risk to human health or environmental receptors as a result of illegal dumping at the Far East Illegal Dump Site.

References:

Cape Environmental Management Inc (CAPE), 2016. Revised Draft Final Uniform Federal Policy Quality Assurance Project Plan – Remedial Investigation at Far East Illegal Dump Site, Environmental Remediation Services at Four Installation Restoration Program Sites and Military Munitions Program Sites at Fort Bliss, Texas. December 2016.

CAPE, 2017. Draft Remedial Investigation Report, Far East Illegal Dump Site, Environmental Remediation Services at Four Installation Restoration Program Sites and Military Munitions Program Sites at Fort Bliss, Texas. August 2017.

Connor, Jon J. and Shacklette, Hansford T., 1975. Et al. Background Geochemistry of Some Rocks, Soils, Plants, and Vegetables in the Conterminous United States. Geological Survey Professional Paper 574-F, US Geological Survey. United States Government Printing Office, Washington. 1975.

Oneida Total Integrated Enterprises, Inc. (OTIE), 2014. Draft Preliminary Assessment Report, Preliminary Assessment and fencing for Illegal Dump site at Far East Fort Bliss For Bliss, El Paso County, Texas, August 2014.

3) Provide the information below for the nearest surface water body which has become or has the potential to become impacted from migrating COCs via surface water runoff, air deposition, groundwater seepage, etc. Exclude wastewater treatment facilities and stormwater conveyances/impoundments authorized by permit. Also exclude conveyances, decorative ponds, and those portions of process facilities which are:

a. Not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State; and

b. Not consistently or routinely utilized as valuable habitat for natural communities including birds, mammals, reptiles, etc.

The nearest surface water body is *0.75* miles from the affected property and is named *Sand Tank*. The water body is best described as a:

- ☐ freshwater stream: _____ perennial (has water all year)
  _____ intermittent (dries up completely for at least 1 week a year)
  _____ intermittent with perennial pools
- ☐ freshwater swamp/marsh/wetland
- ☐ saltwater or brackish marsh/swamp/wetland
- ☒ reservoir, lake, or pond; approximate surface acres: *0.63*
- ☐ drainage ditch
- ☐ tidal stream ☐ bay ☐ estuary
- ☐ other; specify

Is the water body listed as a State classified segment in Appendix C of the current Texas Surface Water Quality Standards; "307.1 - 307.10?

☐ Yes Segment # _____ Use Classification:

☒ No

If the water body is not a State classified segment, identify the first downstream classified segment.

The Sand Tank surface water pond is not connected to any streams or other water bodies as shown on the USGS

topographic map and the TCEQ Surface Water Quality Viewer (refer to the supporting documents). There appear to be no surface water features within the site vicinity that feed into a classified downstream segment. The nearest water bodies that feed into the Rio Grande Below International Dam segment are approximately 15 miles southwest, near El Paso. However, none of those water bodies appear to be downstream of the site. The nearest classified segment (mileage-wise) is listed below.

Name: *Rio Grande Below International Dam*

Segment #: *2308*

Use Classification: *Freshwater Stream*

As necessary, provide further description of surface waters in the vicinity of the affected property:

The TCEQ Surface Water Quality Viewer and the USGS Topographic Map do not show surface water at the property. Both maps show a tank, Shark Tank, approximately 0.75 miles southeast of the property. The next nearest surface water body is an unnamed stream located 1.1 miles southeast of the property originating from the mountain peak located west of the Hueco Mountains. However, that unnamed stream is not connected to any named surface water bodies. The two nearest (not downstream) named surface water bodies are the Rio Grande River (approximately 20 miles southwest) and Eightmile Draw (approximately 20 miles east northeast). Surface water bodies that feed into the Rio Grande River appear to be within Interstate I-10, which is approximately 15 miles southwest of the Site.

PART II. Exclusion Criteria and Supportive Information

Subpart A. Surface Water/Sediment Exposure

1) Regarding the affected property where a response action is being pursued under the TRRP, have COCs migrated and resulted in a release or imminent threat of release to either surface waters or to their associated sediments via surface water runoff, air deposition, groundwater seepage, etc.? Exclude wastewater treatment facilities and stormwater conveyances/impoundments authorized by permit. Also exclude conveyances, decorative ponds, and those portions of process facilities which are:

a. Not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State; and

b. Not consistently or routinely utilized as valuable habitat for natural communities including birds, mammals, reptiles, etc.

☐ Yes ☒ No

Explain:

As indicated in the RI Report, no COPCs were identified, so no remedial response action is being pursued to address potential contamination. There has been no evidence of migration of any contamination as described below.

Surface water release – As indicated in PART I, Item 3, the nearest surface water body is Sand Tank, which is 0.75 miles southeast of the site. Chemicals detected at the site consists of metals. However, none of the metals detected were determined to be COPCs. However, metals are not generally mobile. Without a water body to mobilize and transport the metals, transport is not likely.

Sediments via surface water runoff – Since there is no pathway for site chemicals to reach surface water bodies, release or imminent release of contaminants from surface water runoff to sediments is also not a pathway.

Air disposition - Due to its dry climate, El Paso often experiences wind and dust storms during the spring, usually starting in March and lasting into early May. Average wind speed of these wind and dust storm can reach approximately 27-miles per hour (mph) (43-kilometers per hour [km/hr]), and wind gusts within the storm have been measured at over 75 mph (120 km/hr). Wind storms such as these can kick up large amounts of sand and could cause a loss of visibility (Novlan et al. 2007). Metals detected at the site, which were determined to not be COPCs, may sorb to soils. However, based on RI sampling data, including samples collected outside of the site footprint, no spread of metals outside the site have been observed.

Groundwater seepage - The depth to groundwater at the site is approximately 360 – 390 feet bgs and the metals detected during the RI are relatively immobile in an arid environment. Therefore, it is highly unlikely they would migrate to the deep groundwater at the site. Therefore, the groundwater seepage is not anticipated.

References:

CAPE, 2017. Draft Remedial Investigation Report, Far East Illegal Dump Site, Environmental Remediation Services at Four Installation Restoration Program Sites and Military Munitions Program Sites at Fort Bliss, Texas. August 2017.

Novlan D, Hardiman M, Gill T, 2007. A Synoptic Climatology of Blowing Dust Events in El Paso, Texas from 1932–2005 (paper J3.12). 16th Conference on Applied Climatology, American Meteorological Society; San Antonio, TX. January 2007.

If the answer is Yes to Subpart A above, the affected property does not meet the exclusion criteria. However, complete the remainder of Part II to determine if there is a complete and/or significant soil exposure pathway, then complete PART III - Qualitative Summary and Certification. If the answer is No, go to Subpart B.

Subpart B. Affected Property Setting

In answering "Yes" to the following question, it is understood that the affected property is not attractive to wildlife or livestock, including threatened or endangered species (i.e., the affected property does not serve as valuable habitat, foraging area, or refuge for ecological communities). (May require consultation with wildlife management agencies.)

1) Is the affected property wholly contained within contiguous land characterized by: pavement, buildings, landscaped area, functioning cap, roadways, equipment storage area, manufacturing or process area, other surface cover or structure, or otherwise disturbed ground?

☐ Yes ☒ No

Explain:

*The site is located in an undeveloped area in far eastern Fort Bliss, approximately 15 miles northeast of the main cantonment area (refer to **Figure 1-1** included in the supporting documentation**).** The site is relatively flat with low-relief type mounding/undulating topography roughly one to four feet in height, with scattered desert scrub brush throughout. The Site includes a three-strand, 12.5-gauge, smooth-wire fence with a doublewide gate, which was installed in 2014.*

If the answer to Subpart B above is Yes, the affected property meets the exclusion criteria, assuming the answer to Subpart A was No. Skip Subparts C and D and complete PART III - Qualitative Summary and Certification. If the answer to Subpart B above is No, go to Subpart C.

Subpart C. Soil Exposure

1) Are COCs which are in the soil of the affected property solely below the first 5 feet beneath ground surface **or** does the affected property have a physical barrier present to prevent exposure of receptors to COCs in surface soil?

☒ Yes ☐ No

Explain:

No COCs were identified at this site. However, localized chromium and lead detections were detected above background concentrations in surface soil (0-0.5 feet bgs) in one grid area (Grid 3). Grid 3 is wholly contained within a three-strand barbed wire fence (physical barrier). For the Risk Assessment, no COPCs were identified and no risks to human health or ecological receptors were identified.

If the answer to Subpart C above is Yes, the affected property meets the exclusion criteria, assuming the answer to Subpart A was No. Skip Subpart D and complete PART III - Qualitative Summary and Certification. If the answer to Subpart C above is No, proceed to Subpart D.

Subpart D. *De Minimus* Land Area

In answering Yes to the question below, it is understood that all of the following conditions apply:

☐ The affected property is not known to serve as habitat, foraging area, or refuge to threatened/endangered or otherwise protected species. (Will likely require consultation with wildlife management agencies.)
☐ Similar but unimpacted habitat exists within a half-mile radius.
☐ The affected property is not known to be located within one-quarter mile of sensitive environmental areas (e.g., rookeries, wildlife management areas, preserves). (Will likely require consultation with wildlife management agencies.)
☐ There is no reason to suspect that the COCs associated with the affected property will migrate such that the affected property will become larger than one acre.

1) Using human health protective concentration levels as a basis to determine the extent of the COCs, does the affected property consist of one acre or less and does it meet all of the conditions above?

☐ Yes ☐ No

Explain how conditions are met/not met:

If the answer to Subpart D above is Yes, then no further ecological evaluation is needed at this affected property, assuming the answer to Subpart A was No. Complete PART III - Qualitative Summary and Certification. If the answer to Subpart D above is No, proceed to Tier 2 or 3 or comparable ERA.

PART III. Qualitative Summary and Certification (Complete in all cases.)

Attach a brief statement (not to exceed 1 page) summarizing the information you have provided in this form. This summary should include sufficient information to verify that the affected property meets or does not meet the exclusion criteria. The person should make the initial decision regarding the need for further ecological evaluation (i.e., Tier 2 or 3) based upon the results of this checklist. After review, TCEQ will make a final determination on the need for further assessment. **Note that the person has the continuing obligation to re-enter the ERA process if changing circumstances result in the affected property not meeting the Tier 1 exclusion criteria.**

Completed by: (b) (6) *(Typed/Printed Name)*

Project Engineer *(Title)*

August 1, 2017 *(Date)*

I believe that the information submitted is true, accurate, and complete, to the best of my knowledge.

(b) (6), PE *(Typed/Printed Name of Person)*

Senior Engineer *(Title of Person)*

(b) (6)

(Signature of Person)

(Date Signed)

Tier 1 Exclusion Criteria Checklist Summary

The site passes the criteria outline in the Tier 1 Ecological Checklist based on the evaluation in Subparts A and C. The potential exposure and impact to ecological receptors is not significant and therefore, no further ecological evaluation is necessary. Note that an ecological risk assessment was conducted as part of the Risk Assessment included in the RI Report. The ecological risk assessment concluded that no contaminants of potential ecological concern were identified in environmental media at the site. Therefore, there are no complete exposure pathways and no unacceptable risk to environmental receptors. Summaries of Subparts A and C, as included in this evaluation are provided below.

SUBPART A *(Surface Water/Sediment Exposure)*
The Site passes the criteria set forth in Subpart A. As indicated in the RI Report, no COPCs were identified, so no remedial response action is being pursued to address potential contamination. There has been no evidence of migration of any metals detected during the RI as described below.

The nearest surface water body is Sand Tank, which is 0.75 miles southeast of the site. Chemicals detected at the site consists of metals. The metals were not identified as COPCs. Metals are not generally mobile. Without a water body to mobilize and transport the metals, transport is not likely. Since there is no pathway for site chemicals to reach surface water bodies, release or imminent release of contaminants from surface water runoff to sediments is also not a pathway. Air disposition of metals detected at the site could be possible. Based on RI sampling data, including samples collected outside of the site footprint, no spread of metals outside the site boundary have been observed. The depth to groundwater at the site is approximately 360 – 390 feet bgs and the metals detected during the RI are relatively immobile in an arid environment. Therefore, it is highly unlikely they would migrate to the deep groundwater at the site. Therefore, the groundwater seepage is not anticipated.

SUBPART C *(Soil Exposure)*
The Site passes the criteria set forth in Subpart C. The RI Report did not identify COPCs or COCs for this site. However, localized chromium and lead detections were detected above background concentrations in surface soil (0-0.5 feet bgs) in one grid area (Grid 3). Grid 3 is wholly contained within a three-strand barbed wire fence (physical barrier). For the Risk Assessment included in the RI Report, no COPCs were identified and no risks to human health or ecological receptors were identified.

Tier 1 Exclusion Criteria Checklist Supporting Documentation

A Figure 1-1 Site Map
B PA Tables 1 and 2
C Topographic Map
D Aerial Image
E Figure 4-1 Soil Sample Results Map
F Surface Water Map

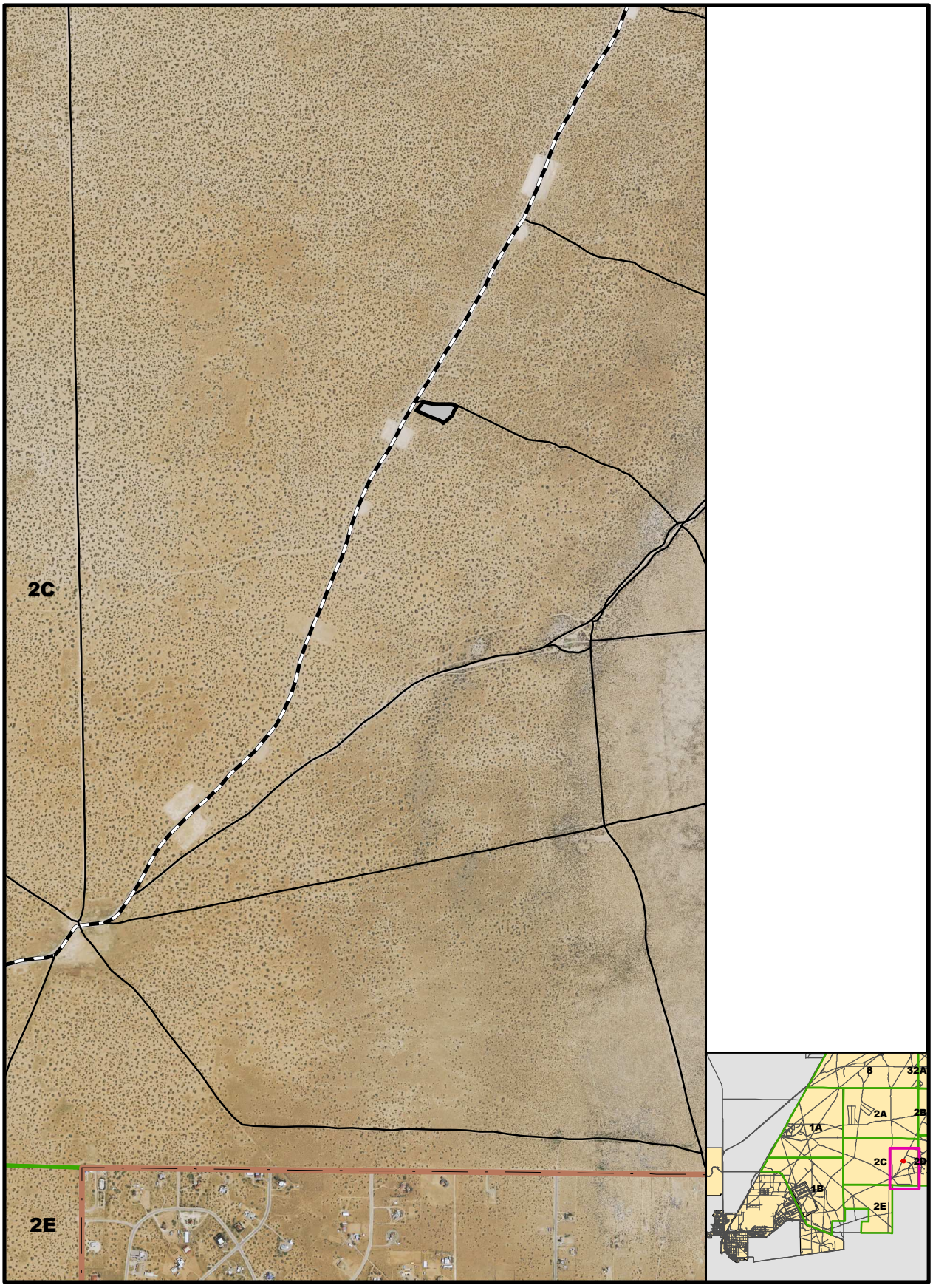

2C
2E
8
32A
2A
2B
1A
2C
2D
1B
2E

Table 1 - Metals
Illegal Dumping Site in Far East Fort Bliss
Fort Bliss, Texas

						Location ID	SS-01	SB-01	SS-02	SB-02	SS-03	SB-03	SS-04	SB-04	SS-05	SS-05	SB-05	SS-06	SB-06	SB-06
						Sample Type	N	N	N	N	N	N	N	N	N	FD	N	N	N	FD
						Sampe Date	31-Mar-14	31-Mar-14	31-Mar-14	31-Mar-14	01-Apr-14	01-Apr-14	31-Mar-14	31-Mar-14	31-Mar-14	31-Mar-14	31-Mar-14	09-Apr-14	09-Apr-14	09-Apr-14
Analyte	**Method**	**Units**	**EPA[a] Screening Level Resident Soil**	**EPA[a] Screening Level Industrial Soil**	**Texas State Background Levels[b]**															
Arsenic	SW6020	mg/Kg	0.67	3.00	5.90		1.59	2.19	4.37	2.19	2.92	1.72	3.41	2.73	1.30	1.29	1.32	1.83	1.78	1.71
Barium	SW6020	mg/Kg	15000	220000	300		159	43.8	61.9	43.8	333	53.3	99.7	140	26.2	27.4	30.1	35.8	40.2	37.3
Cadmium	SW6020	mg/Kg	70	980	N/A		0.308 J	0.948	6.53	0.948	3.21	0.264 J	3.09	3.87	0.0481 J	0.490 U	0.0504 J	0.477 U	0.483 U	0.485 U
Chromium	SW6020	mg/Kg	N/A	N/A	30		3.96	18.6	24.7	18.6	18.0	8.08	18.7	12.0	4.00	3.83	3.35	4.15	4.06	4.39
Lead	SW6020	mg/Kg	400	800	15		7.00	48.2	280	48.2	875	29.7	134	145	4.25	4.08	3.15	4.37	4.33	4.69
Mercury	SW7471B	µg/Kg	9400	40000	40		2.01 J	5.47	6.11	5.47	40.2	1.86 J	14.1	18.7	3.50 U	3.42 U	3.59 U	3.26 J	3.98	3.86
Selenium	SW6020	mg/Kg	390	5800	0.3		0.318 J	0.361 J	0.370 J	0.361 J	0.324 J	0.233 J	0.288 J	0.268 J	0.325 J	0.230 J	0.312 J	0.394 J	0.302 J	0.374 J
Silver	SW6020	mg/Kg	390	5800	N/A		0.498 U	0.506 U	0.199 J	0.506 U	2.14	0.132 J	0.0830 J	0.118 J	0.475 U	0.490 U	0.482 U	0.477 U	0.483 U	0.485 U

Notes:

[a] United States EPA Region 6 Regional Screening Level (RSL) website http://www.epa.gov/region6/6pd/rcra_c/pd-n/screen.htm

[b] Connor, Jon J. and Shacklette, Hansford T., et al. Background Geochemistry of Some Rocks, Soils, Plants, and Vegetables in the Conterminous United States. Geological Survey Professional Paper 574-F, US Geological Survey. United States Government Printing Office, Washington. 1975.

FD - Field Duplicate

J - Analyte was positively identified, but the associated numerical value is estimated

mg/Kg - milligrams per Kilogram

N - Normal Sample

N/A - Not Available

µg/Kg - micrograms per Kilogram

U - analyte was analyzed for, but not detected at the specified reporting limit

Table 2 - Detected Results
Illegal Dumping Site in Far East Fort Bliss
Fort Bliss, Texas

Sample Location	Sample Type	Sample Date	Test Number	Analyte	Result	Units	Residential Soil EPA[a] (µg/kg)	Industrial Soil EPA[a] (µg/kg)
SB-02	N	31-Mar-14	SW8081	4,4´-DDD	3.9	µg/Kg	2200	9600
SB-02	N	31-Mar-14	SW8081	4,4´-DDE	15	µg/Kg	1600	6800
SB-04	N	31-Mar-14	SW8081	4,4´-DDE	7.3	µg/Kg	1600	6800
SS-03	N	01-Apr-14	SW8081	4,4´-DDE	6.1	µg/Kg	1600	6800
SS-04	N	31-Mar-14	SW8081	4,4´-DDE	3.3 J	µg/Kg	1600	6800
SB-02	N	31-Mar-14	SW8081	4,4´-DDT	26	µg/Kg	1900	8600
SS-02	N	31-Mar-14	SW8081	4,4´-DDT	5.1	µg/Kg	1900	8600
SS-04	N	31-Mar-14	SW8081	alpha-BHC	3.4	µg/Kg	85	370
SS-03	N	01-Apr-14	SW8082	Aroclor 1016	60	µg/Kg	4000	30000
SS-04	N	31-Mar-14	SW8081	beta-BHC	7.1	µg/Kg	300	1300
SB-02	N	31-Mar-14	SW8270	Bis(2-ethylhexyl)phthalate	56 J	µg/Kg	38000	160000
SB-04	N	31-Mar-14	SW8270	Bis(2-ethylhexyl)phthalate	180	µg/Kg	38000	160000
SS-04	N	31-Mar-14	SW8270	Bis(2-ethylhexyl)phthalate	97 J	µg/Kg	38000	160000
SB-02	N	31-Mar-14	SW8270	Butyl benzyl phthalate	150 J	µg/Kg	280000	1200000
SS-04	N	31-Mar-14	SW8270	Chrysene	76 J	µg/Kg	15000	290000
SB-04	N	31-Mar-14	SW8260	Dichloromethane (Methylene Chloride)	14	µg/Kg	57000	1000000
SS-01	N	31-Mar-14	SW8260	Dichloromethane (Methylene Chloride)	7.2 J	µg/Kg	57000	1000000
SS-04	N	31-Mar-14	SW8260	Dichloromethane (Methylene Chloride)	16	µg/Kg	57000	1000000
SS-05	FD	31-Mar-14	SW8260	Dichloromethane (Methylene Chloride)	30	µg/Kg	57000	1000000
SB-04	N	31-Mar-14	SW8151	Dichlorprop	76	µg/Kg	N/A	N/A
SS-05	FD	31-Mar-14	SW8151	Dichlorprop	58	µg/Kg	N/A	N/A
SS-06	N	09-Apr-14	SW8151	Dichlorprop	5.2 J	µg/Kg	N/A	N/A
SS-02	N	31-Mar-14	SW8081	Dieldrin	2.3 J	µg/Kg	33	140
SB-02	N	31-Mar-14	SW8081	Endrin	8.5	µg/Kg	18000	250000
SS-02	N	31-Mar-14	SW8081	Endrin	1.9 J	µg/Kg	18000	250000
SS-04	N	31-Mar-14	SW8270	Fluoranthene	52 J	µg/Kg	2300000	30000000
SB-04	N	31-Mar-14	SW8081	gamma-Chlordane	1.3 J	µg/Kg	N/A	N/A
SS-04	N	31-Mar-14	SW8081	Heptachlor	5.6	µg/Kg	120	510
SS-05	FD	31-Mar-14	SW8260	Isopropylbenzene (Cumene)	2.5 J	µg/Kg	1900000	9900000
SS-01	N	31-Mar-14	SW8270	Phenol	35 J	µg/Kg	18000000	250000000
SB-02	N	31-Mar-14	SW8260	Toluene	1.9 J	µg/Kg	4900000	47000000
SB-04	N	31-Mar-14	SW8260	Toluene	1.8 J	µg/Kg	4900000	47000000
SS-01	N	31-Mar-14	SW8260	Toluene	1.1 J	µg/Kg	4900000	47000000
SS-04	N	31-Mar-14	SW8260	Toluene	3.0 J	µg/Kg	4900000	47000000
SS-05	N	31-Mar-14	SW8260	Toluene	1.3 J	µg/Kg	4900000	47000000
SS-05	FD	31-Mar-14	SW8260	Toluene	11	µg/Kg	4900000	47000000
Sample Location	**Sample Type**	**Sample Date**	**Test Number**	**Analyte**	**Result**	**Units**	**0.5 acre source area TRRP[b] (mg/kg)**	**30 acre source area TRRP[b] (mg/kg)**
SS-06	N	09-Apr-14	TX1006	Total Aliphatic Fraction	200	mg/Kg	N/A	N/A
SS-06	N	09-Apr-14	TX1006	Total Aromatic Fraction	37	mg/Kg	N/A	N/A
SS-06	N	09-Apr-14	TX1005	Total Petroleum Hydrocarbon	280	mg/Kg	N/A	N/A
SS-06	N	09-Apr-14	TX1006	Total Petroleum Hydrocarbons	240	mg/Kg	N/A	N/A
SS-06	N	09-Apr-14	TX1005	>nC12 to nC28	**65 J**	mg/Kg	2300	2000
SS-06	N	09-Apr-14	TX1005	>nC28 to nC35	**210**	mg/Kg	2300	2000
SS-06	N	09-Apr-14	TX1006	Aliphatics >nC21 to nC35	**200**	mg/Kg	110000	110000
SS-06	N	09-Apr-14	TX1006	Aliphatics Relative % Distribution	84	mg/Kg	N/A	N/A
SS-06	N	09-Apr-14	TX1006	Aromatics >nC21 to nC35	**37**	mg/Kg	1900	1900
SS-06	N	09-Apr-14	TX1006	Aromatics Relative % Distribution	16	mg/Kg	N/A	N/A

Notes:

[a] United States EPA Region 6 Regional Screening Level (RSL) website http://www.epa.gov/region6/6pd/rcra_c/pd-n/screen.htm

[b] Texas Risk Reduction Protection (TRRP) Protective Concentration Levels (PCLs) for Residential Soil Table 1 (includes inhalation, ingestion, dermal, and vegetable consumption pathways) http://www.tceq.state.tx.us/remediation/trrp/trrppcls.html

FD - Field Duplicate
J - Analyte was positively identified, but the associated numerical value is estimated
mg/Kg - milligrams per Kilogram
N - Normal Sample
N/A - Not Available
µg/Kg - micrograms per Kilogram

Far East Illegal Dump Site

GoogleEarth Pro Aerial Image, April 2017

GRID 3		
ANALYTE	0 - 0.5 FT	2 - 3 FT
Chromium (mg/kg)	56.9[X]	5.5
Lead (mg/kg)	42.9[X]	3.6
Selenium (mg/kg)	2.1[X]	1.4
Mercury (mg/kg)	0.0098 J	0.017 U

GRID 4		
ANALYTE	0 - 0.5 FT	2 - 3 FT
Arsenic (mg/kg)	1.9	3.3 (3.4)
Lead (mg/kg)	10.5	3.8 (3.9)
Selenium (mg/kg)	2.3[X]	1.1 (1.3)
Mercury (mg/kg)	0.012 J	0.017 U (0.0099 J)

BACKGROUND 1		
ANALYTE	0 - 0.5 FT	2 - 3 FT
Arsenic (mg/kg)	1.6	2.3
Barium (mg/kg)	28.6 J	92.2
Chromium (mg/kg)	4.8	4.1
Lead (mg/kg)	[4.6]	2.7
Selenium (mg/kg)	1.8	1.4
Mercury (mg/kg)	0.0090 J	0.0070 J

NORTH OF GRID 1	
ANALYTE	0 - 0.5 FT
Lead (mg/kg)	4.9 (4.8)
Selenium (mg/kg)	1.8 (2.2[X])
Mercury (mg/kg)	0.0083 J (0.0080 J)

GRID 1		
ANALYTE	0 - 0.5 FT	2 - 3 FT
Lead (mg/kg)	4.4	2.0
Selenium (mg/kg)	1.8	1.5
Mercury (mg/kg)	0.0098 J	0.015 U

GATE ENTRANCE

WIRE FENCE

WIRE FENCE

GRID 7		
ANALYTE	0 - 0.5 FT	2 - 3 FT
Lead (mg/kg)	5.4	4.0
Selenium (mg/kg)	2.1[X]	2.1[X]
Mercury (mg/kg)	0.0074 J	0.014 J

GRID 8		
ANALYTE	0 - 0.5 FT	2 - 3 FT
Lead (mg/kg)	5.5	4.3
Selenium (mg/kg)	1.9	2.0[X]
Mercury (mg/kg)	0.013 J	0.0089 J

GRID 5		
ANALYTE	0 - 0.5 FT	2 - 3 FT
Arsenic (mg/kg)	1.6	2.6
Lead (mg/kg)	5.9	2.7
Selenium (mg/kg)	1.9	1.5
Mercury (mg/kg)	0.010 J	0.010 J

GRID 2		
ANALYTE	0 - 0.5 FT	2 - 3 FT
Lead (mg/kg)	4.6	2.1
Selenium (mg/kg)	2.1[X]	1.4
Mercury (mg/kg)	0.013 J	0.016 U

SOUTH OF GRID 8	
ANALYTE	0 - 0.5 FT
Lead (mg/kg)	4.1
Selenium (mg/kg)	2.1[X]
Mercury (mg/kg)	0.0088 J

GRID 6		
ANALYTE	0 - 0.5 FT	2 - 3 FT
Arsenic (mg/kg)	2.1	2.7
Lead (mg/kg)	5.2	2.8
Selenium (mg/kg)	2.2[X]	1.6
Mercury (mg/kg)	0.0098 J	0.0085 J

WIRE FENCE

BACKGROUND 2		
ANALYTE	0 - 0.5 FT	2 - 3 FT
Arsenic (mg/kg)	[2.0]	[3.1]
Barium (mg/kg)	[38.4]	[112]
Chromium (mg/kg)	[5.7]	4.2
Lead (mg/kg)	3.9	2.5
Selenium (mg/kg)	[2.0]	1.4
Mercury (mg/kg)	[0.0098 J]	0.0065 J

GRID 9		
ANALYTE	0 - 0.5 FT	2 - 3 FT
Arsenic (mg/kg)	1.6	2.8
Lead (mg/kg)	4.1	3.3
Selenium (mg/kg)	1.8	1.9[X]
Mercury (mg/kg)	0.0096 J	0.0065 J

WIRE FENCE

BACKGROUND 3		
ANALYTE	0 - 0.5 FT	2 - 3 FT
Arsenic (mg/kg)	1.5	2.3
Barium (mg/kg)	21.2	54.4
Chromium (mg/kg)	3.8	[5.5]
Lead (mg/kg)	4.0	[3.5]
Selenium (mg/kg)	1.4	[1.9]
Mercury (mg/kg)	0.0096 J	[0.0084 J]

GRID 10		
ANALYTE	0 - 0.5 FT	2 - 3 FT
Arsenic (mg/kg)	1.6	3.5
Barium (mg/kg)	32.9	291
Lead (mg/kg)	3.4	3.7
Selenium (mg/kg)	1.4	2.1[X]
Mercury (mg/kg)	0.0095 J	0.012 J

N

GRAPHIC SCALE

0 25 50 100 FEET

Legend

- Wire Fence
- Sampling Grid
- Discrete Soil Sample Location
- 7 — Multi-Incremental Surface Soil Sample Grid ID
- 3.3 (3.4) — Field Duplicate Results Are Shown in Parentheses
- FT — Feet
- mg/kg — Milligram(s) Per Kilogram
- 4.1 — Highlighted Results Exceed Most Stringent Screening Level (refer to Appendix A-2)
- 1.9 — Underlined Results Exceed Texas-Specific Background Concentrations (refer to Appendix A-3)
- 2.1[X] — Result Exceeds Site-Specific Maximum Background Value for Depth Interval from Background Samples 1 through 3. Maximum Background Value Per Depth Interval Indicated By [ ] On Background Results Shown. Refer to Remedial Investigation Report Section 4.1.3 and Section 4.2.2.
- J — Analyte Was Positively Identified; The Associated Numerical Value is the Approximate Concentration of the Analyte in the Sample.

Department of the Army

PROJECT NAME

ENVIRONMENTAL REMEDIATION
MULTIPLE SITES AT FORT BLISS, TX

SHEET TITLE

REMEDIAL INVESTIGATION SOIL SAMPLE RESULTS
FAR EAST ILLEGAL DUMP SITE, FORT BLISS, TEXAS

REVISIONS:

No.	Date	By	Chk	Remarks

CONTRACT NO: W91ZLK-13-D-0003	JOB NO: 21003.003.100
CHECKED BY: S.MOOREHEAD	DRAWN BY: C.WALKER
REVIEWED BY: M.MILLER	DATE: AUGUST 2017
SCALE: AS SHOWN	FILE NAME:

SHEET NUMBER:

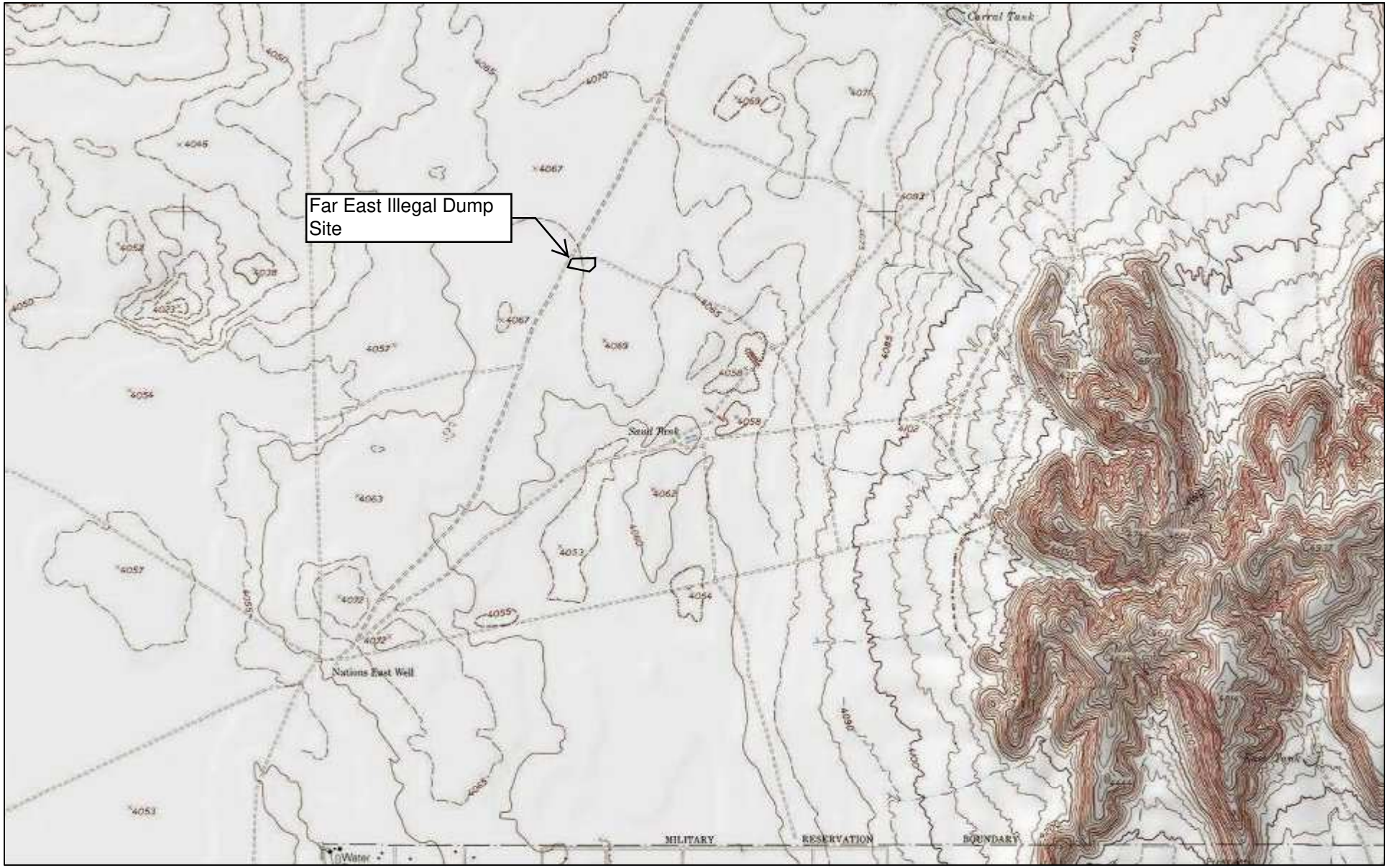
FIGURE 4-1

Z:\CONUS\Federal\ARMY\FORT BLISS\21003.003.100\Far East Site Illegal Dump Site\QUAPP\Figures\Figure 17-2 Far East Illegal Dump Site.dwg Plot Date:1/12/2016 10:38 AM

10/03/2018

002937

Far East Illegal Dump Site, Fort Bliss, Surface Water map



June 22, 2017

Assessment Units - Streams

Assessment Units - Reservoirs

1:36,112

0 0.3 0.6 1.2 mi

0 0.35 0.7 1.4 km

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